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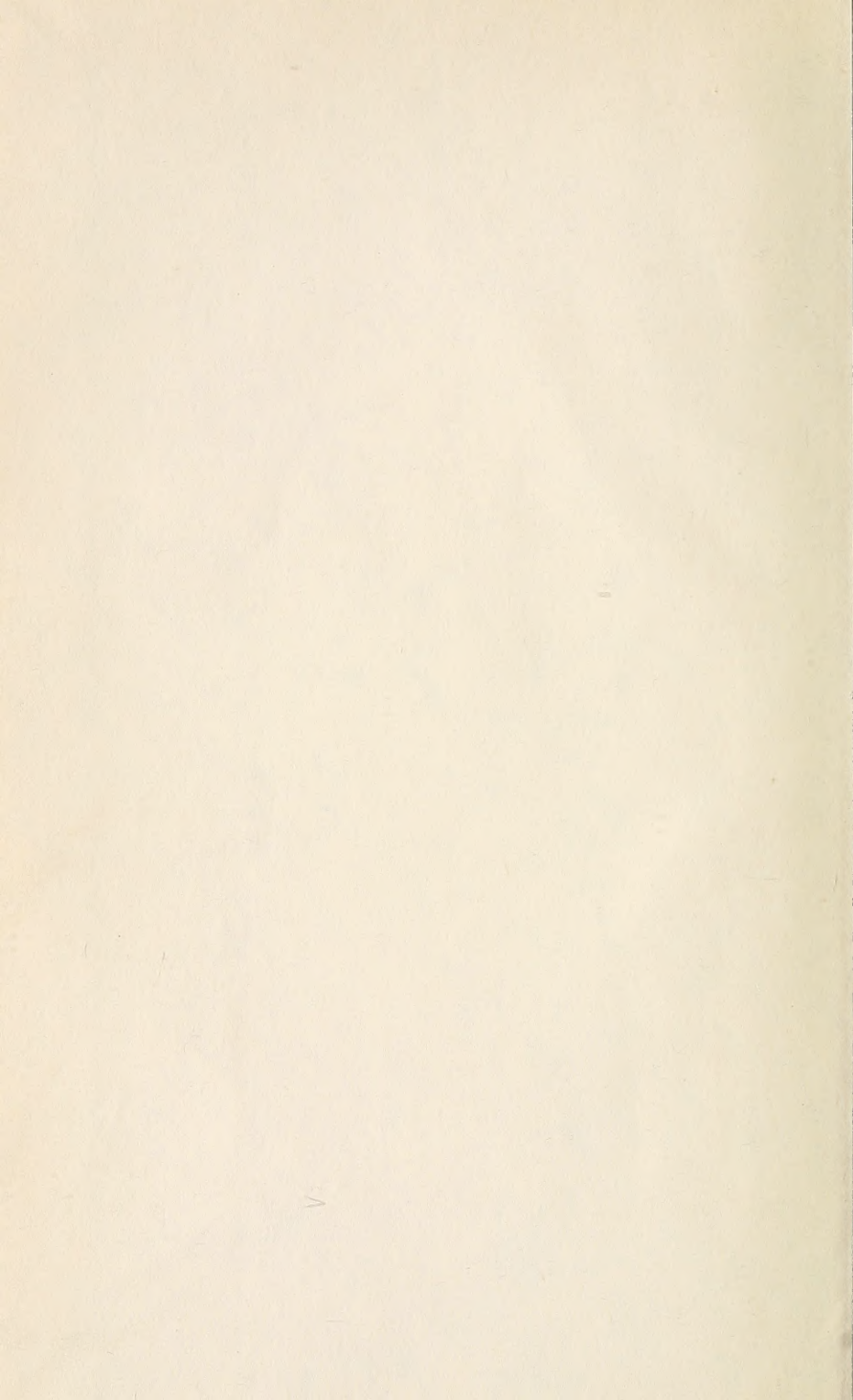
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ELEVENTH BIENNIAL REPORT

OF

THE DEPARTMENT OF CONSERVATION AND DEVELOPMENT

OF THE

STATE OF NORTH CAROLINA

BIENNIUM ENDING JUNE 30, 1946

BOARD OF CONSERVATION AND DEVELOPMENT

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A. H. GUION.....	Charlotte
W. ROY HAMPTON.....	Plymouth
ROBERT W. PROCTOR*.....	Marion
ERIC W. RODGERS†.....	Scotland Neck
MILES J. SMITH.....	Salisbury
D. M. STAFFORD.....	Pomona
A. K. WINGET.....	Albemarle

R. BRUCE ETHERIDGE, *Director*.....Raleigh

* Succeeded Dr. J. D. Rudisill, deceased.

† Succeeded J. R. Wollett, deceased.

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DEPARTMENT PERSONNEL AND
PRINCIPAL OFFICERS

LETTER OF TRANSMITTAL

Raleigh, N. C.
October 15, 1946

TO HIS EXCELLENCY, HON. R. GREGG CHERRY
Governor of North Carolina

Sir:

In accordance with Section 11, Chapter 122, Public Laws of 1925, and by direction of the Board of Conservation and Development, I have the pleasure of submitting herewith the Eleventh Report of the Department of Conservation and Development for the biennium ending June 30, 1946.

There are shown in this report a review of the activities of the Department during the last two-year period and a financial statement for the biennium.

Respectfully submitted,
R. BRUCE ETHERIDGE,
Director.

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In Memoriam

During the biennium, two valued members of the Board of Conservation and Development have passed on to the Great Beyond.

Dr. J. D. Rudisill, of Lenoir, died on July 29, 1945, and J. R. Wollett, of Littleton, on June 26, 1946.

Dr. Rudisill served on the Committees on Game and Inland Fisheries and State Advertising; and Mr. Wollett was a member of the Committees on Forestry, Game and Inland Fisheries, and Commercial Fisheries.

Both of the members exhibited a keen interest in the activities of the Board and Department and devoted freely their time and attention toward the cause of helping to make the State a better and more prosperous place in which to live.

Dr. Rudisill was succeeded by Robert W. Proctor, of Marion, and Eric W. Rodgers, of Scotland Neck was appointed to fill the unexpired term of Mr. Wollett.

DEPARTMENT PERSONNEL AND PRINCIPAL OFFICERS

(As of June 30, 1946)

ADMINISTRATIVE

R. BRUCE ETHERIDGE, *Director*
PAUL KELLY, *Assistant Director*
W. RAY BISHOP, *Chief Auditor*
MRS. ETOYAL P. HOBBIE, *Senior Accounting Clerk*
EULA LINCOLN, *Senior Accounting Clerk*
EVELYNE YELVERTON, *Senior Stenographer-Clerk*
MARGARET SCOTT, *Senior Stenographer-Clerk*
NELL WELLONS, *Senior Stenographer-Clerk*
L. W. BUNN, *Principal General Clerk*
MRS. ANNIE W. RAGLAND, *Junior General Clerk*

DIVISION OF COMMERCIAL FISHERIES

CAPT. JOHN A. NELSON, *Commissioner*
D. M. DAVIS, *Assistant Commissioner*
THOS. A. BASNIGHT, *Assistant Commissioner*
N. R. WEBB, *Principal Accounting Clerk*
N. McKEITHAN CALDWELL, *District Sanitarian*
MARY E. WILLIS, *Senior Stenographer-Clerk*

DIVISION OF COMMERCE AND INDUSTRY

PAUL KELLY, *Industrial Engineer*
PHILIP SCHWARTZ, *Industrial Analyst*
MARSHALL L. SHEPHERD, *Assistant Industrial Engineer*
W. C. LEHEW, *Assistant Industrial Engineer*
MARY LEE COWPER, *Senior Stenographer-Clerk*
MARIE LAMM, *Junior Stenographer-Clerk*

DIVISION OF FORESTRY AND PARKS

W. K. BEICHLER, *State Forester*
F. H. CLARIDGE, *Assistant Forester (Management)*
J. R. SPRATT, *Assistant Forester (Fire Control)*
THOMAS W. MORSE, *Superintendent of State Parks*
P. W. TILLMAN, *Chief Forest Inspector*
W. J. CLARK, *Forest Inspector*

ROGER D. HUFF, *Management Forester* (in coöperation with
U. S. Forest Service)

CHARLIE C. STOTT, *Assistant Superintendent of State Parks*

P. A. GRIFFITHS, *Management Assistant*

R. D. MORIN, JR., *Management Assistant*

H. G. BOLICK, *Landscape Engineer*

ARCHIE B. SMITH, *Equipment Supervisor*

M. M. CARSTARPHEN, *Law Enforcement Ranger*

MRS. GRACE W. PREVOST, *Senior Accounting Clerk*

MRS. EDNA J. ALMAND, *Senior Stenographer-Clerk*

MRS. MABEL D. YOUNG, *Senior Stenographer-Clerk*

EVELYN SANDERS, *Senior Stenographer-Clerk*

MRS. W. FRANK BELL, *Senior Accounting Clerk*

HATTIE BARNES, *Senior Stenographer-Clerk*

MRS. PHYLLIS PROBST, *Junior Stenographer-Clerk*

MRS. J. W. MCINTOSH, *Junior Accounting Clerk*

MARTHA MAYO, *Junior Stenographer-Clerk*

DISTRICT FORESTERS

B. H. CORPENING, Asheville

JAMES A. PIPPIN, Rockingham

JAMES B. HUBBARD, Elizabeth City

DAVID J. MARTZ, Rocky Mount

W. L. BREWER, JR., Whiteville

CHARLES C. PETTIT, JR., Sylva

ASSISTANT DISTRICT FORESTERS

CHARLES M. HARTSOCK, JR.,
Elizabeth City

BENJAMIN R. HARLEY, Fayetteville
SPENCER L. WILSON, New Bern

FOREST NURSERY FORESTERS

FRANK J. MILLER, Clayton Nursery

STATE FOREST SUPERVISORS

ERIC ERICSON, Elizabethtown

THOMAS C. ELLIS, *State Forest Ranger*

DISTRICT FOREST RANGERS

T. E. BEGLEY, Asheville

T. R. McMILLAN, Fayetteville

E. P. SIMMONS, Lenoir

H. S. MORRISSETTE, Elizabeth City

A. D. WILLIAMS, Lenoir

LARUE McQUEEN, Whiteville

N. T. FAULKNER, Rockingham

WILLIAM S. EDMUNDS, Whiteville

F. L. HOOKER, New Bern

MACK ASHE, Sylva

L. W. DAVIS, New Bern

E. C. FEREBEE, New Bern

DISTRICT OFFICE STENOGRAPHER-CLERKS

ELIZABETH WILSON, Asheville

MRS. ROSA K. STALEY, Rocky
Mount

MRS. MARY P. CLARK, Lenoir

ANNA CAMPBELL, Fayetteville

MRS. RACHEL COVINGTON,
Rockingham

ELIZABETH HARRELL, Elizabeth City

JULIA WESKITT, New Bern

CECILE BROWN, Whiteville

CAROLYN LEWIS, Sylva

STATE PARK SUPERINTENDENTS

J. W. KISTLER, Crabtree Creek

STATE PARK RANGERS

RAY M. SISK, Cliffs of the Neuse

STATE PARK WARDENS

JESSE LONG, Fort Macon
J. W. KING, Crabtree Creek
THOMAS E. SLATER, Crabtree Creek
CARL R. FLINCHUM, Hanging Rock
JAMES W. SPEER, Hanging Rock
GRADY L. MILLS, Morrow Mountain
CHARLIE J. MILLS, Morrow
Mountain
JOHN R. WILSON, Mt. Mitchell
THOMAS F. DAVENPORT, Pettigrew
CLARINE BRISSON, *Senior Stenographer-Clerk*

FOREST NURSERYMEN

MOODY M. CLEMMONS, Clayton Nursery
HARRY CLEMMONS, Clayton Nursery
PELZIE HAMILTON, Holmes Nursery

DIVISION OF GAME AND INLAND FISHERIES

JOHN D. FINDLAY, *Commissioner*
MARGARET C. McLEAN, *Senior Stenographer-Clerk*
BILLIE McCONNELL, *Senior Stenographer-Clerk*

FISCAL AND PROPERTY

LINDSEY B. HOPKINS, *Associate Engineer*
MRS. ESTHER C. WILLIAMSON, *Senior Accounting Clerk*
MRS. MATTIE R. KEYS, *Senior Accounting Clerk*
MARY WEATHERS, *Senior Stenographer-Clerk*

PROTECTION

C. D. KIRKPATRICK, *Chief of Law Enforcement*
MRS. GERTRUDE L. DEATON, *Senior Stenographer-Clerk*
E. P. KEEN, *Law Enforcement Supervisor*
TOM L. ROLLINS, *Law Enforcement Supervisor*
ROBERT F. LOGAN, *Law Enforcement Supervisor*
E. L. NICHOLSON, *Law Enforcement Supervisor*
J. HAROLD KING, *Law Enforcement Supervisor*

FISHERIES MANAGEMENT

WILLIS KING, *Principal Biologist*
MRS. GRACE BYRD, *Senior Stenographer-Clerk*
ARTHUR R. SHIELDS, *Senior Biologist*
ED E. HUESKE, *Junior Biologist*

FEDERAL AID IN WILDLIFE RESTORATION

DENNIS HART, *Coördinator*

ELSIE PROCTOR, *Senior Stenographer-Clerk*

W. E. MCCONNAUGHEY, JR., *Project Leader*

W. B. ROBBINS, *Project Leader*

W. L. HAMNETT, *Project Leader*

ROBERT J. WHEELER, JR., *Project Leader*

FRED MAHAN, *Project Leader*

EDUCATION

THOMAS H. WALKER, *Senior Publicity Specialist*

JEWELL EATMAN, *Publicity Clerk*

MANAGEMENT AREAS AND REFUGES

R. B. ARMFIELD, *Supervisor*

DIVISION OF MINERAL RESOURCES

JASPER L. STUCKEY, *State Geologist*

THOMAS G. MURDOCK, *Assistant State Geologist*

PHILIP N. SALES, *Senior Chemist*

E. WILLARD BERRY, *Associate Geologist (part time)*

JANE ANDERSON, *Senior Stenographer-Clerk*

DIVISION OF STATE ADVERTISING

W. P. SHARPE, *Manager*

JOHN G. HEMMER, *Senior Publicity Specialist*

E. CARL SINK, *Senior Publicity Specialist*

LOUISE MISH, *Senior Stenographer-Clerk*

LUCILLE WHITE, *Junior Stenographer-Clerk*

MRS. IRMA BARBOUR, *Typist-Clerk*

DIVISION OF WATER RESOURCES AND ENGINEERING

W. H. RILEY, *Principal Engineer*

F. E. DAY, *Associate Engineer*

RALEIGH T. DANIEL, *Chemist*

SALLAINE SLEDGE, *Junior Stenographer-Clerk*

REPORT OF DIRECTOR

Conditions with extraordinary variations have been confronted during the period covered by this report. During the earlier months, a two-front war, taxing to the limit our resources, both human and natural, was in progress.

Later in the biennium, Germany and Japan capitulated to the United States and her allies. Thus, war and reconversion conditions were confronted during the biennium. Because our resources were devoted so thoroughly to war purposes, the problems of reconversion were more complex.

With the conclusion of war, an opportunity for service, perhaps never equalled in our State, presented itself to the Department of Conservation and Development.

The demand of the times for an aggressive conservation program not only offers wider opportunity for service but is a challenge to our vision and energies. We cannot, therefore, stand still in our activities if we accept the challenge to help build a more prosperous commonwealth and speed our people along the path of progress.

War requirements drew heavily upon our natural resources; and, if we do not put constructive measures in force, the productivity of some of these resources may be impaired for the future and our people may be deprived of the full use and enjoyment of our abundant raw materials. On the other hand, new channels for utilization of our natural resources have been pointed out during these strenuous times and we would be neglectful of our heritage should we fail to pick up these new ideas and follow them through.

PERSONNEL

Through most of the biennium sufficient personnel was not available to carry on in the most effective manner all of the functions of the Department. Even the limited personnel underwent repeated changes.

In spite of the handicaps of limited personnel and scarce materials, the Department takes pride in the fact that it was able to continue all of its essential services and functions without break. This was only possible through the willingness of the staff to take on extra duties and responsibilities.

Personnel problems began to relax around the middle of 1945 with the gradual release of some of the Department staff from military service. By the end of the report biennium virtually all of those on leave had returned and once again filled their former positions. At the same time additional help was becoming available, although not all of the shortage had been relieved.

Of major significance among the changes in the executive and technical force of the Department was the retirement of J. S. Holmes

on May 20, 1946, as State Forester. Mr. Holmes was a pioneer not only in forestry work in the State but in the entire field of conservation.

Since June 1, 1909, Mr. Holmes had directed North Carolina's forestry program. His service as State Forester, or equivalent position, outdates the creation of the Department by about 16 years. During these years, Mr. Holmes has carried a heavy load and often the results of his efforts were not immediately apparent. However, within the last few years, many of the policies and achievements toward which he labored have become actualities.

For some years, Mr. Holmes considered retirement or a less strenuous assignment, but through loyalty to the cause to which he had devoted such a large portion of his life, he remained on the job. At his request, on February 1, 1945, he relinquished the office of State Forester and became Associate State Forester. William K. Beichler, who began his service with the Department as District Forester at Asheville on July 1, 1927, and who had been promoted through various grades, succeeded Mr. Holmes as State Forester.

Mr. Holmes has made a substantial contribution to the welfare and advancement of the State. It is my privilege, as Director of this Department, to give expression to a debt of gratitude to Mr. Holmes for his long devotion to duty and the outstanding service he has rendered the State.

BUDGET

The last year of this biennium was the first year of the biennial appropriation period. For this reason, the financial statement in this report covers one year each in two appropriation bienniums.

The unexpended balance for the latter year of the biennium (1945-46) was probably the largest in the history of the Department. This balance grew primarily out of the fact that the staff of the Department was unusually short and because of the scarcity of supplies and equipment. For this reason, many of the activities of the Department were curtailed sharply.

Because of limited personnel, it has not been possible during the last several years to proceed on schedule with various features of our program. For this reason, the demand for services and improvements in the future will be heavier.

The Democratic party, in its platform adopted at the State Convention in 1946, called for increased emphasis on the conservation of the resources of North Carolina. The platform had the following to say on this subject: "North Carolina is richly endowed with natural resources. Wise State policy calls for their protection against selfish spoliation and for their constructive use in serving the needs of the people. We commend what the State Department of Conservation and Development is doing to promote the sound utilization of our natural resources and to prevent unwise exploitation. There must be further expansion in the indispensable activities of this State agency. The State is not now making adequate provisions for the existing State Parks and for the establishment of new State Parks. We endorse more generous support of the State Park system which can contribute so substantially to the health and happiness of the people. The State

of North Carolina has a material financial interest in the travel industry. Money spent to attract tourists to North Carolina is returned manyfold in gasoline and sales tax revenues and in increased patronage for thousands of business establishments. The travel industry deserves the fullest support of the State. Flood control, reforestation, and power development should be encouraged in the State."

DIVISION ACTIVITIES

A portion of this report is devoted to the activities of each of the seven divisions of the Department. Therefore, this section summarizes only some of the more important activities and accomplishments of each.

Commercial Fisheries: From the standpoint of financial return to the fishermen, the past biennium has probably been the most fruitful in the history of the State. This was in spite of a slight drop in the catch of food fish, oysters, clams, and soft shell crabs. Total value of all water products to the fishermen during 1944-46 was \$14,287,030, in comparison with \$10,294,710 for the preceding two-year period.

In July, 1945, the Board of Conservation and Development proposed that efforts be made to acquire the Coast Guard Section Base near Morehead City, formerly known as Camp Glenn, for the use of the Division of Commercial Fisheries. Action was immediately started toward this end, and by the close of the biennium the State's priority stood first and there were strong indications that the property might be obtained, if means for its purchase can be found.

There has been a strong belief in the Department and Board for some time that the program of the Division of Commercial Fisheries should be broadened to include additional constructive features looking toward the expansion of the yield from commercial fishing. Heretofore, means to do little else than to protect the industry by regulations have been available, with the exception of some oyster planting and the establishment of an oyster experimental farm. If the Section Base can be acquired and other means made available, the facilities there will house the administrative force of the Division and furnish some of the facilities necessary to establish research and educational activities.

One of the greatest needs of the industry has been additional refrigeration facilities, and the Department has worked for years to remedy this situation. Some years ago, it induced the Emergency Relief Administration to establish the North Carolina Fisheries, Inc., with facilities at various points on the coast but with the principal plant at Morehead City. When this organization was liquidated, some of the facilities at the Morehead City plant were diverted to other uses. However, the main facilities have now been acquired by a company which will operate them as a seafood plant.

During the biennium, the Division of Commercial Fisheries and Commerce and Industry, in coöperation with other agencies, assisted in the establishment of the Beaufort Quick Freezing Company. Besides helping to relieve the ice shortage, the new company will market

processed seafoods and will also furnish additional storage capacity to help care for periodic gluts. Limited icing and storage facilities have, from year to year, resulted in severe wastage in fish. The new developments are, therefore, among the most significant accomplishments in recent years in behalf of the industry and fishermen.

Commerce and Industry: The past two years have been among the busiest and most strenuous in the history of the Division. Although a number of prospects for industrial development was anticipated, they exceeded by a wide margin these expectations. The problem of handling this large number of prospects was accentuated by the lack of trained and experienced personnel.

A new phase of industrial development in the form of the Rural Industries program was launched during the biennium. This movement has as its prime objective the establishment of a larger number of small manufacturing plants, located in rural areas, utilizing nearby raw materials and rural labor, and financed by local capital.

The program also seeks to claim for the farmer and producer of raw materials a larger share of the return from the consumer goods through the processing of their products. It is intended, in addition, to help balance and diversify the industrial structure of the State.

In the fall of 1945, Governor R. Gregg Cherry appointed a Committee on Rural Industries, consisting of more than 100 of the leading citizens of the State, and a meeting of this group was held in Raleigh in November of that year to plan a course of action. This group recommended a series of district meetings for the purpose of explaining the program and putting the plan into effect. Administration was assigned to the Division of Commerce and Industry and the program will be launched formally as soon as the necessary personnel can be procured.

During the biennium, the Division has worked with more industrial prospects for the State than in any similar period. The movement toward decentralization of industry which has been forecast over a period of years seemed to gain full momentum. Added to this trend was the demand for additional facilities for the manufacture of new or improved products developed during the last several years and for filling the backlog of orders which developed during the years of shortages.

It should be realized that competition for these industries among the states is keener at this time than ever before. While it is not proper to say that our Division of Commerce and Industry is specifically responsible for the location of any definite number of new industries in North Carolina, it has had a direct hand in many of these; has co-operated with other agencies in securing others; and has indirectly contributed to others. It is known definitely that some of the new plants locating in the State would have gone elsewhere had not the State's facilities been presented by the Division.

The fact that the State advertising program, particularly the industrial phase, was continued throughout the war, has helped to center attention on North Carolina's industrial opportunities. These advertisements were prepared and placed under the direction of the Division of Commerce and Industry.

Forestry: While the total forest area under fire protection increased approximately 167,000 acres over the previous biennium, primary emphasis was placed on increasing the efficiency of the organization and intensifying protection. Sixty-three counties are now coöperating in fire protection, a net gain of two over June 30, 1944.

It is significant that thirty-seven counties, with approximately 4,000,000 acres of forest lands now have no organized fire protection. Because it is doubtful whether more complete and effective fire control can be had under the present system, the problem of whether the State should assume a much larger obligation in this connection must now be faced. That the State should do so is the general opinion among those who have studied the situation closely and budget requests this fall will probably follow this pattern.

Improvement in the fire detection and reporting system has been accomplished during the biennium, as is also the case with fire control and suppression methods. These factors, according to the records, are being steadily reflected in more effective fire protection, the basic requirement in our forestry program.

The Division is also pushing, to the full extent of its facilities, sound management practices which have as their ultimate goal the treatment of the forests as a crop which will be perpetually productive under proper handling.

Large areas of forest lands in the State had become unproductive because of unwise handling and should be reforested by planting. The Forestry Division foresees a substantial increase in interest in the planting of these idle acres and also predicts a demand for planting stock which will require expansion of the capacities of the State Forest Nurseries. This need should be supplied.

Recreational requirements of the State have grown steadily during the past several years and every indication is that they will continue to increase. A part of this demand must be supplied by State Parks. The fact that during June, 1946, the State Parks had more patrons than ever before is significant.

North Carolina does not at present have an adequate State Park system nor are those units that have been established developed to the extent to make them most serviceable. More facilities will, of course, provide the attractions for heavier use and greater returns in a financial way.

The State Parks Branch of this Division's report names the Parks, reviews the facilities available in each, and points out the needs for further development if they are to provide the services which the public is demanding.

Game and Inland Fisheries: During this report period there has been a complete reorganization of the Division of Game and Inland Fisheries under the direction of Commissioner John D. Findlay.

One of the most outstanding features of this reorganization has been in the protector force. All protectors were put on a full-time basis and a Chief of Law Enforcement charged solely with this feature of the program was appointed. For enforcement purposes, the State was divided into five divisions with a supervisor in charge of each

and in turn the divisions were broken down into districts, comprising county groups. Increased mobility of the force was obtained through the assignment of protectors to operate in the districts rather than being confined to single counties. They work singly or in groups.

Increasing revenues made possible better compensation, although still not adequate, for the protectors. The enforcement record speaks for itself in the effectiveness of the organization. During the first year of the biennium there were 472 prosecutions, with fines amounting to \$3,412 and costs, \$2,447.69. Prosecutions jumped to 2,079; fines to \$14,965.76; and costs to \$15,598 during the second year.

Emphasis, both in the game and inland fisheries program, has been shifted from propagation to management, the theory being to assist nature or to remove as many man-made obstacles as possible to the maintenance and increase of wildlife in its natural habitat. The State's one game farm produced and distributed 3,600 quail. Fish produced at the hatcheries were reared to a larger size at which survival is greater.

Some 413,000 acres of Federal, State, and leased lands are now under intensive game and fish management. On part of these areas, public hunting and fishing were provided and on others a concerted restocking program was carried out. Considerable deer stocking was accomplished on some of these lands and attention was also given to the restoration of other types of wildlife.

Game officials expect that the trend toward a larger number of hunters and fishermen in the field this fall will continue; and if this indication materializes, the increased collections will make possible a still larger and more efficient program.

Unfortunately, the belief that game and inland fisheries funds are used for purposes other than for these programs still persists in the minds of some people. We should like to emphasize again the fact that these funds remain intact and are spent exclusively for the game and inland fisheries programs and for nothing else.

Mineral Resources: World War II, with a demand previously unknown for minerals, stimulated interest in North Carolina's deposits. As a result, the demand for information on this State's minerals increased tremendously.

Fortunately, as a result of the interest of former Governor J. M. Broughton, early in the biennium, and later Governor R. Gregg Cherry and larger appropriations by the 1945 General Assembly, the Division was able to increase materially its service.

Private industry, with the encouragement and active assistance of the Department, launched systematic explorations for oil, with the Coastal Plains being selected for these studies and drilling operations. Two wells, one near Morehead City and the other on Cape Hatteras, were drilled during the biennium, the former reaching a depth of 4,044 and the latter, 10,054 feet.

War-time exploration of the Cranberry iron deposits and Deep River coal fields, which was initiated in 1943 by the Department, and taken up by the U. S. Bureau of Mines in 1944 was continued at intervals during the biennium. One of the results of the interest focused on the Deep River field by geological and exploratory work

was the purchase of some of the best deposits by the Walter A. Bledsoe Company, of Terre Haute, Ind., one of the larger coal mining companies. This company carried on a drilling program of its own and it has been announced that the company will begin the production of coal.

Partly through the efforts of the State Geologist, State College and the Tennessee Valley Authority entered into a coöperative agreement for the establishment of a Mineral Research Laboratory at Asheville. A new building to house the laboratory was sufficiently near completion for the initiation of laboratory work in June 1946. The primary field of the laboratory will be in mineral concentration and utilization, and a full-time chemist employed by the Division has been stationed there.

The Regional Mineral Experiment Station of the U. S. Bureau of Mines, which was announced for State College in 1944, became a reality during the biennium with the completion of the first unit.

The General Assembly of 1945 provided a small appropriation which made possible a renewal of coöperation with the U. S. Geological Survey for topographic mapping, and this work was started in 1945.

State Advertising: At times during the war, there was some question concerning the continuation of the State Advertising program, particularly the feature directed toward the travel public. The decision, however, was that the State had too much invested in the program to risk the breaking of its continuity and to jeopardize the effectiveness of expenditures over a period of years. In keeping with the national policy, however, the advertising during war years did not suggest travel but rather reminded postwar vacationists that North Carolina resorts would be ready to continue to serve them after hostilities had ceased.

Primary stress during war years in the advertising program was laid on the fact that North Carolina's resources, capital, and labor were ready to be applied in an increasing degree toward the manufacture of the sinews of war and articles essential to the civilian population.

Immediately after the close of the conflict, the greater share of the advertising funds was channeled into tourist copy. The News Branch which continued to operate on an abbreviated scale during the war, expanded its work at the close of hostilities.

New literature was prepared for the postwar period; and, in addition, some of the earlier mailing pieces were revised and reissued. These helped to produce record tourist expenditures for the 1946 season. It is estimated that tourists will spend approximately \$175,-000,000 in the State during the year.

A steady flow of news material and photographs has gone out of the State News office during the biennium. The Division released 560 stories to newspapers and sent out 19,489 photographs to illustrate these and other stories.

One of the most effective features of the operation of the News Bureau has been in proposing and helping magazines to work out ideas for articles and stories. In the last two-year period, materials

originating in the News Bureau have found their way into newspapers throughout the nation and in some 150 magazines in this and other countries.

Competition for the tourist trade has increased rapidly, with some 33 states adopting promotional campaigns since the North Carolina program was started. With the country becoming steadily more travel conscious, it is likely that competition will become even keener.

Water Resources and Engineer: The major regular activity of the Division—stream gaging—has been carried on uninterruptedly during the biennium with a total of 132 stations operated in coöperation with the United States Geological Survey, the U. S. Engineers, and the Tennessee Valley Authority.

The quality of water investigation initiated in 1943, in coöperation with the U. S. Geological Survey, has been enlarged to meet an increasing demand for this service. During the biennium, the State Board of Health entered into this program which was then extended to the analysis of public water supplies.

The number of calls for information on the chemical qualities of water has been larger during the last biennium than ever before. These requests grow out of the search on the part of manufacturers for water supplies fitting their particular needs, and the information provided by the laboratory has been of material value in the location of some plants which have selected sites in the State.

A forward step toward the conservation of water resources of the State was the passage of a bill by the General Assembly of 1945 setting up the N. C. State Stream Sanitation and Conservation Committee which was subsequently appointed by Governor R. Gregg Cherry. The Committee is composed of 16 members, 6 representing State agencies and 10 representing industry and municipalities.

The general purpose of this Committee is to study the waste disposal situation in the State and to propose a program under which a solution may be found to the problem. A preliminary survey has been made as a result of arrangements between the State Board of Health and the Engineering Experiment Station at N. C. State College, and a report will be made to the General Assembly.

GENERAL

Resource-Use Education Commission: The problem of employing our resources of all descriptions for the best interests of the people is one of the most pressing and important of our time.

Governor R. Gregg Cherry, on August 8, 1945, appointed the Resource-Use Education Commission of the State Planning Board. Paul Kelly, Assistant Director, was named as the representative of the Department of Conservation and Development on this Commission.

The Commission is made up of representatives of various State agencies, educational institutions, public schools, and organizations concerned with education in various forms. Dr. Clyde A. Erwin, superintendent of public instruction, was elected chairman; Mrs. Ellen Black Winston, vice chairman; Felix A. Grisette, secretary; and the

following comprise the executive committee: Dr. Gordon W. Blackwell, Dr. H. Arnold Perry, Paul Kelly, Mrs. Helen L. Macon, Dr. L. D. Baver and Dr. James E. Shepherd.

Following a meeting of the Commission on October 5, 1945, the executive committee has convened on several occasions. An application has been made to the General Education Board for a grant with which to organize and initiate the program. Various State agencies are prepared to coöperate actively as soon as personnel is selected. Governor Cherry, at the initial meeting of the group summed up the purpose of the Commission as follows: "If we are to improve our ways of living, we must improve the relationship between our people and our resources. To achieve this will require an extensive program of education about our resources, long-time planning such as the State Planning Board is undertaking, and close coöperation among all our public and private agencies."

Oil Exploration: Following the leasing of certain State-owned lands in eastern North Carolina in 1944 to the Coastal Plains Company and the Standard Oil Company, exploration of these properties for oil was inaugurated.

By the end of this report period, two wells had been completed and others were definitely contemplated. While the companies carrying out the program have expressed some encouragement, they do not appear to be in a position to make definite predictions. This Department continues to be very much interested in seeing the search carried out to a definite conclusion.

At the suggestion of the Department, the General Assembly of 1945 enacted two measures designed to protect the interests of the State and the industry in event oil and gas are discovered.

APPROPRIATIONS DIVISIONS
STATEMENTS OF RECEIPTS AND DISBURSEMENTS
Biennium 1944-46

	1944-45	1945-46
I. ADMINISTRATION:		
<i>Disbursements:</i>		
Board of Directors:		
Attending Meetings	\$ 1,246.85	\$ 2,784.85
Director's Office:		
Salary—Director	6,000.00	6,000.00
Salaries and Wages—Staff	15,241.55	19,020.00
Supplies and Materials	253.84	459.05
Postage, telephone, Telegraph and Express	690.76	700.06
Travel Expense	121.11	229.92
Printing and Binding	610.07	152.61
Repairs and Alterations	133.04	91.52
General Expense	190.20	195.45
Equipment	140.96	46.31
TOTAL	\$ 24,628.38	\$ 29,679.77
Less Receipts:		
Sale of Publications		158.75
Payment from Division of Game and Inland Fisheries for Attending Board Meetings	400.00	750.00
TOTAL	\$ 400.00	\$ 908.75
APPROPRIATION	24,228.38	28,771.02
COMMERCE AND INDUSTRY AND ADVERTISING:		
COMMERCE AND INDUSTRY:		
<i>Disbursements:</i>		
Salaries and Wages	\$ 11,122.32	\$ 10,870.70
Supplies and Materials	236.81	448.24
Postage, Telephone and Telegraph	2,320.23	1,831.69
Travel Expense	4,073.42	1,685.01
Printing and Binding	483.37	433.15
Repairs and Alterations		60.13
General Expense	350.75	618.15
Motor Vehicle Operation	507.18	552.13
Equipment	10.00	2,395.83
TOTAL	\$ 19,104.08	\$ 18,895.03
ADVERTISING:		
<i>Disbursements:</i>		
Salaries and Wages	\$ 11,966.07	\$ 14,447.52
Supplies and Materials	2,671.17	2,550.32
Postage, Telephone and Telegraph	1,993.39	3,706.67
Travel Expense	1,854.37	2,584.70
Printing and Binding	14,699.56	12,007.92
Repairs and Alterations	77.01	163.46
Direct Advertising	47,690.05	44,606.30

APPROPRIATIONS DIVISIONS—Continued

	1944-45	1945-46
II. COMMERCE AND INDUSTRY AND ADVERTISING—Continued:		
ADVERTISING—Continued:		
Disbursements—Continued:		
General Expense.....	\$ 1,207.50	\$ 1,944.77
Equipment.....	74.00	288.77
Motor Vehicle Operation.....	610.73	381.64
TOTAL.....	\$ 82,843.85	\$ 82,682.07
TOTAL COMMERCE AND INDUSTRY AND ADVERTISING.....	101,947.93	101,577.10
Less Receipts:		
Sale of Publications.....	177.95	165.95
APPROPRIATION.....	\$ 101,769.98	\$ 101,411.15
III. WATER RESOURCES:		
Disbursements:		
Salaries and Wages.....	\$ 6,246.00	\$ 8,160.15
Supplies and Materials.....	237.91	236.53
Postage, Telephone, Telegraph and Express.....	64.89	63.02
Travel Expense.....	639.52	751.68
Printing and Binding.....	64.70	70.59
Motor Vehicle Operation.....	564.79	834.14
Repairs and Alterations.....	65.20	264.43
Coöperation U. S. Geological Survey.....	10,000.00	10,000.00
Coöperation U. S. Geological Survey-Chemical.....	4,000.00	6,500.00
General Expense.....	2.50	40.00
Equipment.....		704.68
TOTAL.....	\$ 21,885.51	\$ 27,625.22
Less Receipts:		
Private Coöperation.....	652.50	953.40
Payment Board of Health-Water.....		
Investigation.....		2,500.00
TOTAL.....	\$ 652.50	\$ 3,453.40
APPROPRIATION.....	\$ 21,233.01	\$ 24,171.82
IV. MINERAL RESOURCES:		
Disbursements:		
Salaries and Wages.....	\$ 7,616.36	\$ 8,930.00
Supplies and Materials.....	87.44	76.19
Postage, Telephone and Telegraph.....	220.71	248.59
Travel Expense.....	703.51	982.96
Printing and Binding.....	1,269.10	1,700.72
Motor Vehicle Operation.....	704.37	727.17
Repairs and Alterations.....	4.25	2.00
General Expense.....	605.89	39.60
Coöperation U. S. Geological Survey—Ground Water Study.....	3,000.00	4,000.00
Coöperation U. S. Geological Survey—Study of Minerals.....	2,963.62	4,000.00
Coöperation T. V. A. Minreals Study.....		1,999.17
Coöperation U. S. Geological—Geographic.....		
Mapping.....		5,000.00
Special Research.....		389.28
Motor Vehicle Exchange.....		994.55
Equipment.....		30.00
Survey of Mineral Resources.....	2,500.00	
APPROPRIATION.....	\$ 19,675.25	\$ 29,120.23

APPROPRIATIONS DIVISIONS—Continued

	1944-45	1945-1946
V. FOREST FIRE PREVENTION:		
<i>Disbursements:</i>		
<i>Administration:</i>		
Salaries and Wages.....	\$ 11,625.05	\$ 18,955.00
Supplies and Materials.....	237.76	324.82
Postage, Telephone, Telegraph and Express.....	644.17	946.68
Travel Expense.....	1,117.57	1,305.37
Printing and Binding.....	773.87	480.37
Motor Vehicle Operation.....	573.40	2,036.66
Repairs and Alterations.....	74.39	85.09
Equipment.....	599.33	1,515.23
Motor Vehicle Purchase.....	1,034.00	5,380.80
Workmen's Compensation.....	130.46	716.00
Emergency Salary.....	1,141.50	965.00
Insurance and Bonding.....		1,950.00
Study of Forest Utilization.....	1,000.00	
TOTAL.....	\$ 18,951.50	\$ 34,661.02
<i>Coöperative Projects:</i>		
Salaries—Wardens and Rangers.....	\$ 87,963.15	\$ 108,239.98
Wages—Towermen and Firemen.....	56,658.33	70,957.77
Expenses—Fire Wardens.....	3,266.34	3,872.11
Fire Control Equipment.....	30,092.82	54,350.22
Repairs and Alterations.....	6,215.81	7,313.09
Lookout Towers.....	10,489.64	12,437.66
Telephone Lines.....	1,823.14	3,249.73
Buildings.....	4,711.26	16,084.86
Road and Fire Lines.....	1,127.07	3,379.78
Fire Suppression.....	10,144.29	4,662.20
Motor Vehicle Operation.....	17,126.85	25,934.82
Emergency Salary.....	11,890.17	8,921.03
TOTAL.....	\$ 241,508.87	\$ 319,403.25
<i>District No. 1:</i>		
<i>Asheville:</i>		
Salaries and Wages.....	\$ 5,166.20	\$ 3,061.62
Postage, Telephone, Telegraph and Express.....	160.14	172.00
Travel Expense.....	398.71	356.97
Motor Vehicle Operation.....	851.11	742.42
Rents.....	110.00	120.00
Emergency Salary.....	577.07	238.24
TOTAL.....	\$ 7,263.23	\$ 4,691.25
<i>District No. 2—Lenoir:</i>		
Salaries and Wages.....	\$ 5,000.00	\$ 5,840.00
Postage, Telephone, Telegraph and Express.....	158.31	128.56
Travel Expense.....	365.67	258.81
Motor Vehicle Operation.....	928.08	1,225.73
Emergency Salary.....	552.00	360.00
TOTAL.....	\$ 7,004.06	\$ 7,813.10

APPROPRIATIONS DIVISIONS—Continued

	1944-45	1945-46
V. FOREST FIRE PREVENTION—Continued:		
DISBURSEMENTS—Continued:		
<i>District No. 3—Rockingham:</i>		
Salaries and Wages.....	\$ 4,429.55	\$ 5,150.62
Postage, Telephone, Telegraph and Express.....	170.98	218.29
Travel Expense.....	473.99	489.06
Motor Vehicle Operation.....	879.04	1,048.77
Emergency Salary.....	512.71	313.10
TOTAL.....	\$ 6,466.27	\$ 7,219.84
<i>District No. 4—New Bern:</i>		
Salaries and Wages.....	\$ 4,740.00	\$ 6,730.00
Postage, Telephone, Telegraph and Express.....	184.14	194.90
Travel Expense.....	294.05	406.85
Motor Vehicle Operation.....	950.79	1,800.94
Lights.....	17.89	17.89
Emergency Salary.....	552.00	430.00
TOTAL.....	\$ 6,720.98	\$ 9,580.58
<i>District No. 5—Rocky Mount:</i>		
Salaries and Wages.....	\$ 4,562.40	\$ 5,092.14
Postage, Telephone, Telegraph and Express.....	218.29	234.52
Travel Expense.....	508.74	566.47
Motor Vehicle Operation.....	1,111.52	1,198.37
Lights.....	18.00	16.95
Emergency Salary.....	529.84	334.00
TOTAL.....	\$ 6,948.79	\$ 7,442.45
<i>District No. 6—Fayetteville:</i>		
Salaries and Wages.....	\$ 7,139.24	\$ 7,710.00
Postage, Telephone, Telegraph and Express.....	201.10	188.24
Travel Expense.....	792.75	659.57
Motor Vehicle Operation.....	970.50	1,223.21
Lights.....	12.00	12.00
Emergency Salary.....	760.93	430.00
TOTAL.....	\$ 9,876.52	\$ 10,223.02
<i>District No. 7—Elizabeth City:</i>		
Salaries and Wages.....	\$ 4,815.00	\$ 5,972.28
Postage, Telephone, Telegraph and Express.....	124.28	224.05
Travel Expense.....	467.12	499.76
Motor Vehicle Operation.....	916.73	1,422.17
Rents.....	286.00	264.00
Lights.....	6.12	6.12
Emergency Salary.....	552.00	362.73
TOTAL.....	\$ 7,161.13	\$ 8,751.11

APPROPRIATIONS DIVISIONS—Continued

	1944-45	1945-46
V. FOREST FIRE PREVENTION—Continued:		
DISBURSEMENTS—Continued:		
<i>District No. 8—Wilmington:</i>		
Salaries and Wages.....		\$ 4,355.00
Postage, Telephone, Telegraph and Express.....		109.85
Travel Expense.....		482.45
Motor Vehicle Operation.....		1,677.96
Emergency Salary.....		265.00
TOTAL		\$ 6,890.26
<i>District No. 9—Sylva:</i>		
Salaries and Wages.....		\$ 4,076.40
Postage, Telephone, Telegraph and Express.....		95.54
Travel Expense.....		314.96
Motor Vehicle Operation.....		863.92
Rents.....		380.00
Emergency Salary.....		260.16
TOTAL	\$	\$ 5,990.98
TOTAL FOREST FIRE PREVENTION	\$ 311,901.35	\$ 422,666.86
Less Receipts:		
Federal Coöperation.....	\$ 131,468.85	\$ 163,612.32
County Coöperation.....	78,004.48	114,267.28
Private Coöperation.....	12,405.93	18,322.73
TOTAL RECEIPTS	\$ 221,879.26	\$ 296,202.33
APPROPRIATION	\$ 90,022.09	\$ 126,464.53
VI. FOREST FIRE PREVENTION:		
Supplement:		
Special Emergency Fire Control:		
Administration:		
Travel Expense.....	\$ 14.93	\$
Motor Vehicle Operation.....	30.00	
TOTAL	\$ 44.93	\$
Coöperative Projects:		
Wages—Towermen and Firemen.....	\$ 8,652.76	\$ 750.00
Expenses—Fire Wardens.....	261.67	
Fire Control Equipment.....	1,495.33	1.42
Equipment—Repairs.....	457.60	
Fire Suppression.....	41.18	
Motor Vehicle Operation.....		509.17
Lookout Towers.....		34.45
TOTAL	\$ 10,908.54	\$ 1,295.04
Elizabeth City Office:		
Motor Vehicle Operation.....	\$ 71.26	\$
TOTAL	\$ 71.26	\$
TOTAL SPECIAL EMERGENCY	\$ 11,024.73	\$ 1,295.04

APPROPRIATIONS DIVISIONS—Continued

	1944-45	1945-46
VI. FOREST FIRE PREVENTION—Continued:		
SUPPLEMENT—Continued:		
Emergency Fire Control:		
Administration:		
Salaries—Staff.....	\$ 2,610.00	\$ -----
Supplies and Materials.....	11.18	-----
Motor Vehicle Operation.....	294.42	-----
Employees War Bonus.....	261.00	-----
TOTAL.....	\$ 3,176.60	\$ -----
Coöperative Projects:		
Wages—Towermen and Firemen.....	\$ 33,131.65	\$ 2,454.40
Expenses—Fire Wardens.....	133.86	-----
Fire Control Equipment.....	183.84	-----
Equipment—Repairs.....	680.18	4.59
Motor Vehicle Operation.....	1,503.77	372.47
Lookout Towers.....	21.34	-----
Fire Suppression.....	841.86	-----
TOTAL.....	\$ 36,496.50	\$ 2,831.46
Elizabeth City Office:		
Postage, Telephone, Telegraph and Express.....	\$ 106.25	\$ 99.26
Motor Vehicle Operation.....	299.43	-----
Rents.....	360.00	33.10
Lights.....	11.10	-----
TOTAL.....	\$ 776.78	\$ 132.36
TOTAL EMERGENCY FIRE CONTROL.....	\$ 40,449.88	\$ 2,963.82
Plowing Fire Lines Private Forest Owners Cooperative Projects:		
Wages—Operator, Helper.....	\$ 86.50	\$ 251.70
Motor Vehicle Operation.....	58.49	168.35
Repairs and Alterations.....	60.14	215.13
Equipment.....	-----	9.14
TOTAL.....	\$ 205.13	\$ 644.32
TOTAL DISBURSEMENT —SUPPLEMENT.....	\$ 51,679.74	\$ 4,903.18
Less Receipts:		
Federal Cooperation—Special Emergency.....	\$ 11,055.98	\$ 1,295.04
Federal Cooperation—Emergency Fire-Control.....	40,333.88	2,963.82
Private Cooperation—Fire Lines.....	383.20	551.30
TOTAL.....	\$ 51,773.06	\$ 4,810.16
APPROPRIATION.....	\$ -----	\$ 93.02
VII. GENERAL FORESTRY:		
Disbursements:		
Salaries and Wages.....	\$ 4,787.00	\$ 8,328.60
Supplies and Materials.....	53.41	213.61
Postage, Telephone and Telegraph.....	150.20	299.35
Travel Expense.....	53.21	434.92
Printing and Binding.....	402.60	231.83
General Expense.....	12.43	80.25
Equipment.....	145.75	1,079.84
Motor Vehicle Operation.....	-----	307.41
APPROPRIATION.....	\$ 5,604.60	\$ 10,975.81

APPROPRIATIONS DIVISIONS—Continued

	1944-45	1945-46
VIII. STATE FORESTS AND PARKS:		
Disbursements:		
Salaries and Wages.....	\$ 17,863.96	\$ 27,230.39
Labor.....	4,177.18	5,872.18
Supplies and Materials.....	594.80	4,531.16
Postage, Telephone, Telegram and Express.....	309.26	569.65
Travel Expense.....	342.79	847.82
Printing and Binding.....	158.84	138.19
Motor Vehicle Operation.....	3,152.64	4,940.62
Lights and Power.....	425.07	617.04
Repairs and Alterations.....	11,500.51	2,210.55
General Expense.....	358.15	581.70
Insurance and Bonding.....	900.00	44.48
Equipment.....	5,862.77	1,191.78
Motor Vehicle Purchase.....	800.00	1,033.48
Stores for Resale.....	40.53	996.33
Workmen's Compensation.....	400.50	156.00
Building and Improvements—Neuse Cliffs.....	10,000.00	—7,300.00
Equipment—Morrow Mountain Park.....		1,482.00
Equipment—Pettigrew Park.....		—30
Building—Pettigrew Park.....		4,000.00
Purchase of Land.....	—6.50	
TOTAL.....	\$ 56,880.50	\$ 49,143.07
Less Receipts:		
Permits States Lake.....	\$ 220.64	\$ 388.90
Park Concessions.....	4,993.36	12,129.65
Equipment—Morrow Mountain.....		1,482.60
TOTAL RECEIPTS.....	\$ 5,214.00	\$ 14,001.15
APPROPRIATION.....	\$ 51,666.50	\$ 35,141.92
IX. FOREST MANAGEMENT, NURSERIES AND FORESTS:		
FOREST MANAGEMENT:		
Disbursements:		
Salaries and Wages.....	\$.....	\$ 8,670.68
Supplies and Materials.....		99.99
Postage, Telephone, Telegraph and Express.....		99.27
Travel Expense.....		923.86
Printing and Binding.....		80.28
Motor Vehicle Operation.....		680.81
Repairs and Alterations.....		12.05
Equipment.....		1,356.68
Emergency Salary.....		385.33
APPROPRIATION.....	\$.....	\$ 12,308.95
NURSERIES:		
Disbursements:		
Salaries and Wages.....	\$.....	\$ 5,510.00
Labor.....		10,646.85
Supplies and Materials.....		2,079.92
Postage, Telephone and Telegraph.....		515.96
Travel Expense.....		56.79
Printing and Binding.....		27.04
Motor Vehicle Operation.....		1,063.60

APPROPRIATIONS DIVISIONS—Continued

	1944-45	1945-46
IX. FOREST MANAGEMENT, NURSERIES AND FOREST—Continued:		
NURSERIES—Continued:		
<i>Disbursements—Continued:</i>		
Lights and Power.....	\$.....	\$ 108.57
Repairs and Alterations.....	.....	155.74
General Expense.....	.....	30.00
Equipment.....	.....	170.98
Emergency Salary.....	.....	350.00
TOTAL.....	\$.....	\$ 20,715.45
Less Receipts:		
Federal Cooperation.....	\$ 2,061.00	\$ 2,626.99
Sale of Seedlings.....	1,151.40	3,661.42
TOTAL RECEIPTS.....	\$ 3,212.40	\$ 6,288.41
APPROPRIATION.....	\$.....	\$ 14,427.04
STATE FORESTS:		
<i>Disbursements:</i>		
Salaries and Wages.....	\$.....	\$ 4,320.28
Supplies and Materials.....	.....	320.31
Postage, Telephone and Telegraph.....	.....	165.34
Travel Expense.....	.....	161.42
Printing and Binding.....	.....	35.71
Motor Vehicle Operation.....	.....	3,958.45
Light and Power.....	.....	295.52
Repairs and Alterations.....	.....	80.67
Insurance and Bonding.....	.....	5.00
Equipment.....	.....	121.79
Marketing Timber—Bladen Lakes.....	.....	.....
State Forest.....	.....	12,995.95
Emergency Salary.....	.....	237.10
TOTAL.....	\$.....	\$ 22,697.54
Less Receipts:		
Bladen Lakes State Forests.....	\$ 39,698.17	\$ 29,862.78
APPROPRIATION.....	\$.....	\$ -7,165.24
FOREST MANAGEMENT AND PLANTING:		
<i>Disbursements:</i>		
Salaries and Wages.....	\$ 9,774.13	\$.....
Labor.....	8,732.01	.....
Supplies and Materials.....	2,098.94	.....
Postage, Telephone, Telegraph and Express.....	668.99	.....
Travel Expense.....	281.42	.....
Printing and Binding.....	196.47	.....
Motor Vehicle Operation.....	5,746.43	.....
Light and Power.....	452.49	.....
Repairs and Alterations.....	230.75	.....
General Expense.....	15.85	.....
Insurance and Bonding.....	200.00	.....
Equipment.....	6,687.54	.....

APPROPRIATIONS DIVISIONS—Continued

	1944-45	1945-46
IX. FOREST MANAGEMENT, NURSERIES AND FOREST—Continued:		
FOREST MANAGEMENT AND PLANTING—Continued:		
DISBURSEMENTS—Continued:		
Marketing Timber—Bladen Lakes.....	\$ 19,238.28	\$-----
Drilling Well—Bladen Lakes.....	1,555.00	-----
Employees War Bonus.....	1,142.02	-----
TOTAL MANAGEMENT, NURSERIES AND FORESTS.....	\$ 56,420.32	\$ 55,721.94
Less Receipts.....	\$ 42,910.57	\$ 36,151.19
APPROPRIATION, MANAGEMENT NURSERIES AND FORESTS.....	\$ 13,509.75	\$ 19,570.75
MISCELLANEOUS ACCOUNTS:		
Disbursements:		
Emergency Salary.....	\$ 6,391.01	\$ 4,159.00
(Forest Fire, Management, Nurseries and State Forests.....)	18,471.24	13,851.69)
TOTAL.....	\$ 6,391.01	\$ 4,159.00
TOTAL DISBURSEMENTS.....	\$ 657,014.59	\$ 735,572.18
LESS TOTAL RECEIPTS.....	323,007.34	355,692.93
TOTAL DISBURSEMENTS FROM APPROPRIATION.....	\$ 334,007.25	\$ 379,879.25

CONSTRUCTION OF SMALLMOUTH BASS HATCHERY
STATEMENT OF RECEIPTS AND DISBURSEMENTS
Biennium 1944-46

	1945-46
Disbursements:	
Salaries and Wages.....	\$ 5,894.93
Supplies and Materials.....	10,980.86
Postage, Telephone and Telegraph.....	8.08
Travel Expense.....	148.75
Motor Vehicle Operation.....	2,427.22
Rental of Equipment.....	185.98
Equipment.....	5,520.35
Emergency Salary.....	46.77
TOTAL EXPENDITURES FROM APPROPRIATION.....	\$ 25,212.94
TRANSFERRED TO FISCAL YEAR 1946-47.....	\$ 84,867.06
APPROPRIATION.....	\$ 110,080.00

PURCHASE OF TRYON'S PALACE AND
STATEMENT OF RECEIPTS AND DISBURSEMENTS
Biennium 1944-46

TRANSFERRED TO FISCAL YEAR 1946-47.....	\$ 150,000.00
APPROPRIATION.....	\$ 150,000.00

DIVISION OF GAME AND INLAND FISHERIES
SPECIAL FUNDS

STATEMENT OF RECEIPTS AND DISBURSEMENTS

Biennium 1944-46

	1944-45	1945-46
INLAND FISHERIES:		
<i>Disbursements:</i>		
<i>Administration:</i>		
Salary—Supervisor.....	\$ 2,690.00	\$ 1,877.48
Salaries—Staff.....	1,161.00	2,219.40
Salaries—Wardens.....	30,000.00	50,000.00
Supplies and Materials.....	17.09	361.28
Postage, Telephone and Telegraph.....	132.71	200.18
Travel Expense.....	352.07	350.07
Printing and Binding.....	1,437.71	2,327.05
Motor Vehicle Operation.....	409.07	407.88
General Expense.....	49.55	107.03
Legal Notices.....	18.57	17.65
Equipment.....		4.32
Motor Vehicle Exchange.....		994.55
Insurance and Bonding.....	400.00	
TOTAL.....	\$ 36,067.77	\$ 58,866.89
<i>Morrison Hatchery:</i>		
Salaries and Wages.....	\$ 3,645.00	\$ 4,240.50
Supplies and Materials.....	4,051.34	3,209.01
Postage, Telephone, Telegraph and Express.....	48.93	74.61
Travel Expense.....	40.00	30.60
Motor Vehicle Operation.....	465.06	647.52
Lights and Power.....	98.63	94.32
Repairs and Alterations.....	10.23	138.40
Equipment.....		91.30
Motor Vehicle Exchange.....		397.26
TOTAL.....	\$ 8,359.19	\$ 8,923.52
<i>Murphy Hatchery:</i>		
Salaries and Wages.....	\$ 3,185.25	\$ 3,650.45
Supplies and Materials.....	3,454.85	3,102.90
Postage, Telephone, Telegraph and Express.....	113.87	159.10
Travel Expense.....	63.48	75.20
Motor Vehicle Operation.....	761.40	1,071.49
Light and Power.....	11.58	93.30
Repairs and Alterations.....	101.76	231.85
Equipment.....	—7.50	10.26
Motor Vehicle Exchange.....		758.28
Building and Improvements.....	100.00	
TOTAL.....	\$ 7,784.69	\$ 9,152.83
<i>Stedman Hatchery:</i>		
Salaries and Wages.....	\$ 2,365.02	\$ 3,984.90
Supplies and Materials.....	811.73	666.29
Postage, Telephone, Telegraph and Express.....	94.43	99.33
Travel Expense.....	9.90	4.36

DIVISION OF GAME AND INLAND FISHERIES—Continued

	1944-45	1945-46
INLAND FISHERIES—Continued:		
DISBURSEMENTS—Continued:		
<i>Stedman Hatchery—Continued:</i>		
Motor Vehicle Operation.....	\$ 554.50	\$ 688.18
Lights and Power.....	428.61	455.35
Repairs and Alterations.....	261.59	287.51
Equipment.....	42.00	2.00
Buildings and Improvements.....	12.66	34.06
Motor Vehicle Exchange.....	-----	761.53
TOTAL.....	\$ 4,580.44	\$ 6,983.51
<i>Roaring Gap Hatchery:</i>		
Salaries and Wages.....	\$ 2,487.43	\$ 3,685.70
Supplies and Materials.....	1,638.30	1,639.39
Postage, Telephone, Telegraph and Express.....	51.28	99.33
Travel Expense.....	-----	2.45
Motor Vehicle Operation.....	507.80	470.55
Lights and Power.....	116.53	108.91
Repairs and Alterations.....	72.40	93.45
Motor Vehicle Exchange.....	-----	758.03
TOTAL.....	\$ 4,873.74	\$ 6,857.81
<i>Marmon Hatchery:</i>		
Salaries and Wages.....	\$ 2,136.25	\$ 2,771.88
Supplies and Materials.....	3,395.33	3,782.51
Postage, Telephone, Telegraph and Express.....	54.08	74.36
Travel Expense.....	8.58	31.34
Motor Vehicle Operation.....	509.70	730.55
Lights and Power.....	109.96	59.76
Repairs and Alterations.....	97.10	41.55
Equipment.....	-----	—21.66
Rents.....	-----	250.00
Motor Vehicle Exchange.....	-----	753.28
TOTAL.....	\$ 6,311.00	\$ 8,473.57
<i>Lake Mattamuskeett:</i>		
Salaries and Wages.....	\$ 3,300.00	\$ -----
Postage, Telephone, Telegram and Express.....	102.52	-----
Motor Vehicle Operation.....	469.24	-----
Lights and Power.....	49.14	-----
Rents.....	120.00	-----
TOTAL.....	\$ 4,040.90	\$ -----
<i>Miscellaneous Accounts:</i>		
Contribution Retirement System.....	\$ 1,466.55	\$ 2,223.53
Emergency Salary.....	6,169.89	4,710.87
Workmen's Compensation.....	-----	1,120.50
Transfer to Special Funds.....	-----	-----
Purchase and Development Lands and Waters.....	-----	8,217.50
TOTAL.....	\$ 7,636.44	\$ 16,272.40
TOTAL DISBURSEMENTS—INLAND FISHERIES.....	\$ 80,254.17	\$ 115,530.56

DIVISION OF GAME AND INLAND FISHERIES—Continued

	1944-45	1945-46
INLAND FISHERIES—Continued:		
DISBURSEMENTS—Continued:		
<i>Miscellaneous Accounts—Continued:</i>		
Less Receipts:		
Sale of Angler's License.....	\$ 90,512.25	\$ 144,413.00
Transferred from Preceding Year.....	37,213.20	51,753.40
Miscellaneous Receipts.....	102.00	
Sale Boone Hatchery Property.....	4,180.12	
*TOTAL RECEIPTS.....	\$ 132,007.57	\$ 196,166.40
CREDIT BALANCE FORWARD—INLAND FISHERIES.....	\$ 51,753.40	\$ 80,635.87
GAME DIVISION:		
<i>Disbursements:</i>		
<i>Administration:</i>		
Salary—Commissioner.....	\$	\$ 5,000.00
Salaries—Staff.....		7,084.00
Supplies and Materials.....		92.67
Postage, Telephone, Telegraph and Express.....		475.12
Travel Expense.....		1,351.01
Motor Vehicle Operation.....		662.96
Repairs and Alterations.....		21.07
General Expense.....		242.83
Subscription and Dues.....		98.90
Equipment.....		49.44
Motor Vehicle Exchange.....		964.80
Printing and Binding.....		3,839.19
TOTAL.....		\$ 19,881.99
<i>Enforcement:</i>		
Salary—Chief.....		\$ 2,970.00
Salaries and Wages—Staff.....		125,902.63
Supplies and Materials.....		295.54
Postage, Telephone, Telegraph and Express.....		1,799.52
Travel Expense.....		35,900.17
Motor Vehicle Operation.....		4,821.35
Repairs and Alterations.....		29.33
General Expense.....		20.36
Legal Costs.....		126.19
Subscription and Dues.....		2.00
Insurance and Bonding.....		835.52
Equipment.....		498.42
Rents.....		351.00
Motor Vehicle Exchange.....		2,428.90
TOTAL.....		\$ 175,980.93
<i>Administration and Enforcement:</i>		
Salary—Commissioner.....	\$ 5,000.00	
Salary and Wages—Staff.....	130,564.04	
Supplies and Materials.....	436.47	
Postage, Telephone, Telegraph and Express.....	1,857.21	
Travel Expense.....	22,160.45	
Printing and Binding.....	2,416.69	

*Deposits During Fiscal Year.

DIVISION OF GAME AND INLAND FISHERIES—Continued

	1944-45	1945-46
GAME DIVISION—Continued:		
DISBURSEMENTS—Continued:		
ADMINISTRATION AND ENFORCEMENT—Continued:		
Motor Vehicle Operation.....	\$ 2,949.58	\$
Repairs and Alterations.....	26.54	.....
General Expense.....	605.11	.....
Legal Costs.....	25.92	.....
Subscription and Dues.....	80.30	.....
Insurance and Bonding.....	1,500.00	.....
Equipment.....	14.00	.....
Motor Vehicle Exchange.....	567.50	.....
TOTAL.....	\$ 168,203.81	.....
Game Management:		
Administration:		
Salary—Supervisor.....	\$	\$ 2,099.95
Salaries and Wages—Staff.....	.....	3,679.54
Supplies and Materials.....	.....	86.04
Postage, Telephone, Telegraph and Express.....	.....	99.51
Travel Expense.....	.....	552.07
Motor Vehicle Operation.....	.....	647.03
Repairs and Alterations.....	.....	46.42
Equipment.....	.....	—8.28
Motor Vehicle Exchange.....	.....	994.55
TOTAL.....	.....	\$ 8,196.83
Game Farms:		
Salaries and Wages.....	\$ 3,075.65	\$ 2,695.50
Supplies and Materials.....	493.80	982.66
Postage, Telephone, Telegraph and Express.....	20.91	24.82
Travel Expense.....	.....	1.65
Motor Vehicle Operation.....	77.37	73.88
Lights and Power.....	392.04	200.00
Repairs and Alterations.....	20.79	76.70
TOTAL.....	\$ 4,080.56	\$ 4,055.21
Management Areas and Refuges:		
Salary—Biologist.....	\$	\$ 3,000.00
Salaries and Wages—Staff.....	.....	28,787.96
Supplies and Materials.....	.....	500.56
Postage, Telephone, Telegraph and Express.....	.....	425.09
Travel Expense.....	.....	1,178.40
Printing and Binding.....	.....	238.16
Motor Vehicle Operation.....	.....	3,890.78
Equipment.....	.....	128.59
Rental of Dogs.....	.....	2.36
Repairs.....	.....	588.74
Additions and Betterments.....	.....	29.85
Lights and Power.....	.....	64.88
Rents.....	.....	151.32
TOTAL.....	.....	\$ 39,220.33

DIVISION OF GAME AND INLAND FISHERIES—Continued

	1944-45	945-46
GAME DIVISION—Continued:		
DISBURSEMENTS—Continued:		
<i>Mount Mitchell Headquarters Project:</i>		
Supplies and Materials.....	\$ 43.85	\$
Motor Vehicle Operation.....	54.71	.....
Repairs and Alterations.....	112.70	.....
Equipment.....	—8.00	.....
TOTAL.....	\$ 203.26	\$
<i>Western Refuges:</i>		
Salaries and Wages.....	\$ 22,915.44	\$
Supplies and Materials.....	43.54	.....
Postage, Telephone, Telegraph and Express.....	260.44	.....
Travel Expense.....	824.37	.....
Printing and Binding.....	170.07	.....
Motor Vehicle Operation.....	1,726.18	.....
Motor Vehicle Exchange.....	780.00	.....
TOTAL.....	\$ 26,720.04	\$
<i>Holly Shelter and Angola Project:</i>		
Salaries and Wages.....	\$ 1,355.20	\$
Supplies and Materials.....	123.15	.....
Postage, Telephone, Telegraph and Express.....	31.30	.....
Motor Vehicle Operation.....	575.46	.....
Rental of Dogs.....	281.48	.....
Repairs.....	163.00	.....
Additions and Betterments.....	5.08	.....
TOTAL.....	\$ 2,534.67	\$
<i>Education and Training:</i>		
Salary—Supervisor.....	\$	\$ 1,500.00
Salaries and Wages—Staff.....	1,720.00	2,125.75
Supplies and Materials.....	149.77	280.79
Postage, Telephone, Telegraph and Express.....	365.49	999.85
Travel Expense.....	266.09	456.35
Printing and Binding.....	511.08	1,012.37
Motor Vehicle Operation.....	295.73	701.42
General Expense.....	.....	4.00
Equipment.....	.....	117.74
Motor Vehicle Exchange.....	.....	964.80
TOTAL.....	\$ 3,308.16	\$ 8,163.07
<i>Pittman-Robertson Projects:</i>		
<i>Coordinating Projects:</i>		
Salaries and Wages.....	\$ 4,920.00	\$ 4,718.28
Supplies and Materials.....	47.80	55.79
Postage, Telephone, Telegraph and Express.....	42.87	31.59
Travel Expense.....	293.05	318.20
Motor Vehicle Operation.....	398.64	600.00
Equipment.....	17.67	.....
Emergency Salary.....	444.00	120.00
TOTAL.....	\$ 6,164.03	\$ 5,843.86

DIVISION OF GAME AND INLAND FISHERIES—Continued

	1944-45	1945-46
GAME DIVISION—Continued:		
DISBURSEMENTS—Continued:		
<i>SCS District—Cooperative Farm Game Project:</i>		
Salaries and Wages.....	\$ 1,586.91	\$ 1,934.41
Supplies and Materials.....	1,785.79	2,845.52
Postage, Telephone, Telegraph and Express.....	79.19	25.86
Travel Expense.....	278.55	170.60
Motor Vehicle Operation.....	597.57	487.60
Rentals.....	35.00	
Equipment.....	73.00	
Emergency Salary.....	131.71	113.79
TOTAL.....	\$ 4,567.72	\$ 5,577.78
<i>Study of Deer Management of Holly Shelter:</i>		
Salaries and Wages.....	\$ 958.35	\$ 3,346.70
Supplies and Materials.....	134.12	371.84
Postage, Telephone, Telegraph and Express.....	20.99	12.98
Travel Expense.....	1.00	24.80
Motor Vehicle Operation.....	109.88	744.99
Emergency Salary.....	21.00	90.00
TOTAL.....	\$ 1,245.34	\$ 4,591.31
<i>Wildlife Resources Inventory</i>		
Salaries and Wages.....	\$	\$ 885.00
Supplies and Materials.....		5.48
Postage, Telephone, Telegraph and Express.....		3.32
Travel Expense.....		138.96
Motor Vehicle Operation.....		18.66
Equipment.....		2,155.33
Emergency Salary.....		50.00
TOTAL.....	\$	\$ 3,256.75
<i>State-Wide Deer Trapping and Restocking Project:</i>		
Salaries and Wages.....	\$	\$ 3,237.58
Supplies and Materials.....		2,489.46
Postage, Telephone, Telegraph and Express.....		32.43
Travel Expense.....		380.16
Motor Vehicle Operation.....		1,831.17
Equipment.....		405.23
Purchase—100 Deer.....		1,290.00
Emergency Salary.....		175.16
TOTAL.....	\$	\$ 9,841.19
<i>Miscellaneous Projects:</i>		
Motor Vehicle Operation (1944-45 Accounts).....	\$	\$ 199.21
<i>Fur Resources Investigation and Survey:</i>		
Salaries and Wages.....	\$	\$ 924.00
Supplies and Materials.....		47.22
Postage, Telephone, Telegraph and Express.....		14.80
Travel Expense.....		133.50

DIVISION OF GAME AND INLAND FISHERIES—Continued

	1944-45	1945-46
GAME DIVISION—Continued:		
DISBURSEMENTS—Continued:		
FUR RESOURCES INVESTIGATION AND SURVEY—Continued:		
Motor Vehicle Operation.....	\$.....	\$ 133.91
Equipment.....	.....	785.53
Emergency Salary.....	.....	40.00
TOTAL.....	.....	\$ 2,078.96
Goose Creek Land Purchase:		
Salaries and Wages.....	\$ 519.00	\$.....
Supplies and Materials.....	166.55	.....
Travel Expense.....	79.40	.....
Motor Vehicle Operation.....	197.81	.....
Workmen's Compensation.....	53.78	.....
Title Abstracting and Vesting.....	260.50	.....
Purchase of Land.....	8,283.76	.....
Employees War Bonus.....	18.00	.....
TOTAL.....	\$ 9,578.80	\$.....
Survey of Ungranted Land:		
Salaries and Wages.....	\$ 2,337.20	\$.....
Supplies and Materials.....	—284.85	.....
Postage, Telephone, Telegraph and Express.....	.25	.....
Travel Expense.....	450.35	.....
Motor Vehicle Operation.....	260.02	.....
Employees War Bonus.....	198.00	.....
TOTAL.....	\$ 2,960.97	\$.....
Unharrie Deer Restoration:		
Salaries and Wages.....	\$ 2,981.50	\$.....
Supplies and Materials.....	697.82	.....
Postage, Telephone, Telegraph and Express.....	47.25	.....
Travel Expense.....	294.62	.....
Motor Vehicle Operation.....	804.76	.....
Employees War Bonus.....	180.00	.....
TOTAL.....	\$ 5,005.95	\$.....
TOTAL PITTMAN-ROBERTSON PROJECTS.....	\$ 29,522.81	\$ 31,389.06
Bladen Lakes:		
Salaries and Wages.....	\$ 165.00	\$.....
Dog Permits.....	200.00	.....
TOTAL.....	\$ 365.00	\$.....
Miscellaneous Accounts:		
Motor Boats Operation.....	\$ 965.02	\$ 986.50
Equipment—Boats.....	997.28	1,649.87
Workmen's Compensation.....	.....	12.10
Contribution Retirement System.....	5,381.69	6,335.17

DIVISION OF GAME AND INLAND FISHERIES—Continued

	1944-45	1945-46
GAME DIVISION—Continued:		
DISBURSEMENTS—Continued:		
MISCELLANEOUS ACCOUNTS—Continued:		
Emergency Salary.....	\$ 21,258.05	\$ 12,724.64
(Pittman-Robertson Projects.....)	992.71	588.95)
Transfer to Special Funds.....		
Purchase and Development Lands and Waters.....		40,699.50
TOTAL.....	\$ 28,602.04	\$ 62,407.78
TOTAL DISBURSEMENTS.....	\$ 263,540.35	\$ 349,295.20
Less Receipts:		
Sale of Hunting Licenses.....	\$ 239,349.70	\$ 355,955.18
Transferred from Preceding Year.....	86,334.77	88,666.43
Federal Cooperation.....	19,308.42	18,692.18
Receipts—Management Areas.....	595.00	130.00
Receipts—Bladen Lakes.....	511.00	
Miscellaneous Receipts.....	6,107.89	399.00
Sale-Pittman Robertson Equipment.....		234.13
TOTAL RECEIPTS—GAME.....	\$ 352,206.78	\$ 464,076.92
CREDIT BALANCE FORWARD—GAME.....	\$ 88,666.43	\$ 114,781.72
Summary Game and Fish Funds:		
TOTAL CREDIT BALANCE FROM PRECEDING YEAR.....	\$ 123,547.97	\$ 140,419.83
*TOTAL NET RECEIPTS.....	360,666.38	519,823.49
TOTAL NET REVENUE.....	\$ 484,214.35	\$ 660,243.32
LESS TOTAL NET DISBURSEMENTS.....	343,794.52	415,908.73
TOTAL.....	\$ 140,419.83	\$ 244,334.59
Less Transfer to Special Funds:		
Purchase and Development Lands and Waters.....	\$	\$ 48,917.00
TOTAL CREDIT BALANCE FORWARD TO SUCCEEDING YEAR.....	\$ 140,419.83	\$ 195,417.59

PURCHASE AND DEVELOPMENT OF HUNTING AND FISHING
LANDS AND WATERS—SPECIAL FUNDS

STATEMENT OF RECEIPTS AND DISBURSEMENTS

Biennium 1944-46

Disbursements:		
Less Receipts:		
Inland Fisheries Fund:		
Fifty Cents on Each Non-resident and State License Sold.....	\$	\$ 8,217.50
Game Fund:		
Fifty Cents on Each Non-resident, State and Combination License Sold.....	\$	\$ 40,699.50
TOTAL RECEIPTS.....	\$	\$ 48,917.00
TOTAL CREDIT BALANCE FORWARD TO SUCCEEDING YEAR.....	\$	\$ 48,917.00

*Deposits during fiscal year.

DIVISION OF COMMERCIAL FISHERIES

INTRODUCTION

The livelihood of thousands of citizens and the support of their families depend upon commercial fishing. These fishermen are assured that the Department of Conservation and Development will give them the fullest measure of coöperation consistent with the best interest of all concerned. The primary purpose of the Department is to achieve maximum production with a minimum loss to this great natural resource. To this end, rules and regulations, based upon considered judgment, are passed; restricted areas, that have been proved polluted under thorough laboratory test, are set off; as large a patrol of commercial waters as our means will permit is maintained; and an educational program, as personal and individual as possible, is encouraged. However, the Department acknowledges it is not infallible and that mistakes may be made in supervising such a large enterprise.

FOOD FISH

The quality of edible food fish produced this biennium is around a million pounds short of that produced the previous period. This decrease was caused by the lack of ice and adequate facilities for handling the fish and not by their scarcity. During the fall season of 1945 we had more fish than usual but could not market them for the reasons stated above which forced some of the fishermen who had made large catches of fish in their nets to turn them out alive. It is reasonably safe to say that we shall not be handicapped this next biennium or in the foreseeable future by the lack of ice because our ice output has been increased appreciably and because a quick-freezing plant at Beaufort will soon be in operation. The old N. C. Fisheries plant at Morehead City has been sold to a Baltimore concern and renamed the Croatan Freezing Seafood Company. This plant which has a storage capacity of 800,000 pounds that we have never had the advantage of before will also be available in the future for taking care of large catches of fish. The fishermen marketed 90,717,000 pounds of food fish at a price of \$7,692,050 during this biennium as against 91,475,000 pounds the previous biennium at a price of \$6,434,800.

SHRIMP

The production of shrimp this biennium was the largest known for a like period. Large catches of shrimp were made on the inside for the season 1945 two weeks earlier than usual and continued for four weeks longer than usual because of favorable weather. This activity in the ocean during 1945 was a complete failure except in the Southport area. The shrimp catch was 9,826,810 pounds during this biennium at a value of \$1,965,362.00 to the fishermen as against 5,900,000 pounds at a value of \$590,000.00 for the previous period.

MENHADEN

One of the disappointments experienced this biennium was the failure of the out-of-State menhaden boats to fish in our waters north of Hatteras. Previous to the war this Department collected from \$3,500.00 to \$4,500.00 a year in licenses from this activity. The second big disappointment was experienced when the weather turned bad during the fall of 1945 at the height of the fishing season. At that time the large menhaden were here in great schools but the few days of bad weather drove the fish away and when the boats were able to go to sea again fish were found only in small quantities. No other big schools of large menhaden came into our waters during the rest of the season; however, the few days the boats did work in the big fish such quantities of fish were brought in that factories were kept going night and day at full capacity. The State produced this period 376,816,000 menhaden valued at \$2,871,000.00; and marketed 3,768,000 gallons of oil valued at \$2,072,000.00 and 27,181 tons of scrap valued at \$1,627,000.00. The nine menhaden plants in the State, eight of which are in Carteret County and one in Brunswick, represent an investment of \$1,800,000; the boats, \$2,000,000; and nets, \$150,000.

OYSTERS

The oystermen received a much better price for their oysters per bushel during this biennium than ever before. Largely for this reason, more men and many more boats were engaged in this activity than ever before in the history of the industry. The Department did everything it could with the means in hand to keep a close supervision over this activity, especially in enforcing the cull law and the size of power boats engaged in dredging. The production was 721,689 bushels of oysters this biennium valued at \$1,082,534 as against 752,268 bushels for the past biennium valued at \$752,268. This production does not take into consideration the oysters that were used for home consumption and those that were produced on private oyster beds. A bushel of oysters is five pecks instead of four as in other measures.

CLAMS

The output of clams this biennium was 60,814 bushels valued at \$121,628 as against 75,431 bushels valued at \$150,862 for the previous period. This decrease was not due to the lack of clams but because of lack of markets. One of the largest clam dealers was not able to operate this past season because the nationally known canning company which bought his output was not able to get cans to pack the clams. This report does not take into consideration the clams that were used for home consumption.

ESCALLOPS

There was a production of 3,211 gallons of escallops valued at \$12,844 compared with 2,000 gallons at a value of \$4,000 last bi-

ennium. More escallops than for years were available. Nineteen years ago scalloping was one of our main fisheries but after the eel grass disappeared all along the coast the production of escallops stopped completely. The grass is still very scarce and some of the soft crab dealers have to order their grass from Crisfield, Maryland to use in packing their crabs.

CRABS

Within the past few years the hard crab has been much more important to the State and the crabbers than the soft crab from a revenue standpoint. Many more citizens were engaged in the industry and they were more widely distributed. There have been twelve new hard crab packing plants built this biennium in Dare, Beaufort, Pamlico and Carteret counties—the areas where this industry is most active. Production of soft crabs was 69,056 dozen, valued at \$138,112, compared with 76,420 dozen, valued at \$114,630, the previous period. We produced 10,100,000 pounds of hard crabs, valued at \$404,000, this biennium as against 10,000,000 pounds, valued at \$400,000, the previous period.

REPORT OF DISTRICT SANITARIAN

Captain John A. Nelson,
Fisheries Commissioner
Morehead City, N. C.

Dear Captain Nelson:

It is a pleasure to submit this brief report of the various activities conducted by the office of Shellfish Sanitation during the biennium ending June 30, 1946.

During this biennium there were 1,184 sanitary inspections made of the 198 shellfish plants. Samples of shellfish growing waters collected and subjected to bacteriological examinations totaled more than 3,300. Detailed plans for 44 new shellfish plants were prepared and furnished without charge.

North Carolina shellfish industries made great strides during the biennium. In spite of the shortage of building material and essential equipment 22 new shucking plants were built at a cost of \$58,000, increasing the number of plants certified to 48. Twelve new shellstock plants were built at a cost of \$6,000, bringing the total number of shellstock dealers to 130. Twelve new crab meat plants, valued at \$27,000, were built. In addition to the expenditures for new plants of all types, approximately \$32,000 was spent in enlarging or repairing old plants.

The coöperative attitude of most shellfish dealers has demonstrated that they have apparently begun to recognize sanitation as an economic necessity. They have responded admirably to the U. S. Public Health Service's elevation of minimum sanitary requirements. They have learned that quality of product is essential to financial success; I have learned that financial success for the producer is also essential

for best sanitation. Plants now rate favorably with the best in the nation. The weakest link in the production chain has been the acute shortage of willing and competent workers. However, in spite of the many factors retarding production, North Carolina shellfish catchers and shippers enjoyed the most successful seasons in many years. More than a thousand plant employees were provided with well paying jobs.

Due largely to the highly perishable quality of crab meat and shucked oysters, maximum production has neither been attained nor sought. The bulk of shellfish shipments is consigned to northern markets already flooded. Bad roads from plants to main highways cause long delays in shipments to markets. Several new quick-freeze plants are now under construction; perhaps they will furnish the solution to this problem. There is definite need for development of markets within this State. Steps should be taken to acquaint the buying public of the high sanitary quality of North Carolina shellfish.

In coöperation with the Division of Commercial Fisheries of the N. C. Department of Conservation and Development, and the U. S. Public Health Service, the State Board of Health completed extensive sanitary and bacteriological surveys of the following shellfish producing waters: Shallow Bag Bay and Croatan Sound in Dare County; Core Sound, Newport River, Taylor's Creek, Bogue Sound and Oyster Creek in Carteret County; White Oak River, Queen Creek, New River, Stump Sound and Barlow Creek in Onslow County.

As a result of the surveys, the taking of clams and oysters from several thousand acres of productive bottoms has been restricted. Closed areas were marked and suitable posters prepared and distributed. Constant supervision over the patrolling of restricted shellfish areas had been maintained, resulting in the apprehension of several persons observed taking clams or oysters from polluted waters. However, the addition of one or more shallow draft boats for patrolling restricted shellfish waters is recommended as the present territories restricted are too extensive to be amply covered by the boats now available for this purpose. The abnormally large concentration of military and civilian personnel in the coastal areas has multiplied the sewage pollution of coastal waters. Sewerage treatment facilities in many of eastern communities are dangerously inadequate, hence not only has a public health hazard been created but shellfishermen have been deprived of many acres of clam and oyster bottoms.

In concluding this report, I wish to express my appreciation for the complete coöperation and assistance you and the members of your staff have extended me and my co-workers in the performance of our duties.

Respectfully submitted,

N. McKEITHEN CALDWELL,
Shellfish Sanitarian,
 N. C. State Board of Health

DIAMOND-BACK TERRAPIN

Large quantities of diamond-back terrapin are in our waters, but they are not caught because there is no market for them. The Federal Laboratory at Pivers Island liberated 8,500 young terrapin in our sounds and bays during this biennium.

PATROL BOATS

Since the last report the *John A. Nelson* has been returned to us by the Coast Guard and has been sold. We now have the *Hatteras* which is stationed at Morehead City; the *Albemarle*, at Edenton; *Croatan* and *Pungo*, at Manteo; *Ocracoke*, at Belhaven; *Neuse*, at New Bern; and the speed boat, *Atlantic*, at Morehead City. The U. S. Public Health Service has restricted territory for shellfish and the *Atlantic* patrols the territory around Morehead City, Beaufort and in Bogue Sound. We have bought a new boat which is now in New Bern having the house put on it. We hope to have this 46-foot boat, which is known as a Coresounder, ready by the first of the year for patrolling oyster grounds in Pamlico Sound. When this boat has been put in commission, our patrol enforcement services should be much more satisfactory.

KIND, QUANTITY AND VALUE OF FISH TAKEN IN WATERS OF NORTH CAROLINA

For the Period July 1944 to June 30, 1946

Kind of Fish	No. Pounds	Value
Spotted Trout.....	3,500,000	\$ 875,000.00
Gray Trout.....	12,300,000	1,476,000.00
Sea Mullet.....	800,000	48,000.00
Blue Fish.....	1,000,000	120,000.00
Mullet.....	6,500,000	780,000.00
Croakers.....	10,000,000	600,000.00
Spots.....	14,500,000	870,000.00
Hog Fish.....	900,000	54,000.00
Mackerel.....	800,000	120,000.00
Shad.....	1,800,000	720,000.00
Herring.....	30,000,000	900,000.00
Butters.....	1,200,000	72,000.00
Carp.....	1,200,000	144,000.00
Rock or Striped Bass.....	900,000	225,000.00
Flounders.....	2,300,000	345,000.00
Puppy Drum.....	700,000	84,000.00
White Perch.....	800,000	96,000.00
Cats.....	700,000	84,000.00
Eels.....	100,000	12,000.00
Jack.....	500,000	50,000.00
Pike.....	40,000	4,000.00
Pompano.....	15,000	3,750.00
Channel Bass.....	150,000	7,500.00
Sheephead.....	12,000	1,800.00
TOTAL FOOD FISH.....	90,717,000	7,692,050.00
Shrimp.....	9,826,810	1,965,362.00
Menhaden (No. Fish).....	376,816,000	2,871,009.00
TOTAL VALUE FIN FISH.....		\$12,528,412.00

SHELLFISH

Oysters.....	721,689 (bushels).....	\$1,082,534.00
Clams.....	60,814 (bushels).....	121,628.00
Soft Shell Crabs.....	69,056 (dozen).....	138,112.00
Escallops.....	3,211 (gallons).....	12,344.00
Hard Crabs.....	10,100,000 (pounds).....	404,000.00
TOTAL VALUE SHELLFISH.....		\$1,758,618.00

TOTALS

Value of Fin Fish.....	\$12,528,412.00
Value of Shellfish.....	1,758,618.00
TOTAL VALUE WATER PRODUCTS.....	\$14,287,030.00

STATEMENT OF RECEIPTS AND DISBURSEMENTS OF THE DIVISION OF COMMERCIAL FISHERIES, DEPARTMENT OF CONSERVATION AND DEVELOPMENT

For Biennium 1944-45—1945-46

	1944-45	1945-46
ADMINISTRATION AND INSPECTION:		
Commissioner's Salary.....	\$ 4,200.00	\$ 4,800.00
Salaries and Wages—Staff.....	17,024.60	19,858.00
Supplies.....	163.90	102.01
Postage, Telephone and Telegram.....	398.43	305.33
Travel Expense.....	506.45	601.35
Printing and Binding.....	399.09	408.40
Motor Vehicle Operation.....	2,837.25	3,280.21
Office Rent.....	1,000.00	1,066.67
Insurance and Bonding.....	79.12	47.60
Equipment.....		100.00
Other Sources.....		43.50
TOTAL.....	\$ 26,608.84	\$ 30,613.07
OPERATION PATROL BOATS:		
Salaries and Wages.....	\$ 12,261.00	\$ 16,362.50
Supplies.....	4,213.35	4,878.20
Gas and Oils.....	1,956.48	\$ 2,782.54
Repairs.....	3,891.52	5,294.82
Equipment.....	1,547.20	500.00
Subsistence.....	2,638.00	3,632.00
Docks and Warehouses.....	328.43	390.00
Marking Fishing Limits.....	198.50	285.55
Fire Insurance—Patrol Boats.....	90.00	139.17
Repairs Boat Hatteras.....	8,602.79	
Purchase of Boat (\$3,250. hull—\$8,998. transfer).....		12,148.00
TOTAL.....	\$ 35,727.27	\$ 46,412.78
SHELLFISH SANITATION:		
Supplies and Materials.....	\$ 125.74	\$ 90.88
Equipment.....	12.50	25.58
TOTAL.....	138.24	\$ 116.46
OYSTER DEMONSTRATION FARM:		
Salaries and Wages.....	1,200.00	\$ 1,380.00
Supplies.....	146.70	241.50
Insurance and Bonding.....	13.50	
Subsistence.....	240.00	240.00
TOTAL.....	\$ 1,600.20	\$ 1,861.50
Employees War Bonus.....	\$ 2,618.00	\$
Emergency Salary.....		2,714.45
TOTAL EXPENDITURES.....	\$ 66,692.55	\$ 81,718.26
Less Receipts.....	43,567.19	65,439.89
APPROPRIATION.....	\$ 23,125.36	\$ 16,278.37

STATEMENT OF RECEIPTS AND DISBURSEMENTS—Continued

	1944-45	1945-46
RECEIPTS:		
Food Fish Licenses and Taxes.....	\$ 7,993.01	\$ 16,839.37
Oyster Licenses and Taxes.....	8,739.68	15,806.20
Escallop Licenses and Taxes.....		180.55
Clam Licenses and Taxes.....	1,580.53	1,646.58
Crab Licenses and Taxes.....	4,024.37	5,329.54
Menhaden Licenses.....	15,188.00	10,511.50
Power Boat Licenses.....	452.50	357.50
Other Sources.....	3,228.85	2,620.65
Allocation from Navy—Hatteras.....	2,360.25	
Allocation from Navy—Nelson.....		8,998.00
Sale of boat Nelson.....		3,150.00
TOTAL.....	\$ 43,567.19	\$ 65,439.89

DIVISION OF COMMERCE AND INDUSTRY

The biennium covered by this report presented far beyond the ordinary assortment of circumstances with attending variety of problems. During the early part of the two-year period the country was engaged in warfare, and with the termination of the conflict the post-war period was entered.

Naturally, these changing conditions affected vitally the course of industry which ranged from all-out war production, the first steps in reconversion, and civilian production. Even during the latter months of the war, when there was a decreasing demand for war materials and the cancellation of orders began, industry speeded up plans for reconversion.

At the beginning of 1945, activities of the special Committee on War Industrial Coördination were terminated with the completion of a program designed to help manufacturers switch into war production. This Committee, through Secretary J. E. Coad, assisted many industries in bridging the gap between their normal operations and conversion into the production of materials of war. As the production of all except the most essential consumer items was stopped, it was necessary for the best interests of the country and the workers to switch this capacity into more vital production. It was in helping to speed this transition that the most valuable service of the committee was rendered.

Members of the Committee on War Industrial Coördination served on a voluntary basis and they deserve the gratitude of the State. Mr. Coad resigned as secretary of the group at the beginning of 1945 to enter private business.

PERSONNEL

Employment of an adequate staff was one of the primary problems of the Division during the biennium, and at no time during this period was it possible to assemble a complete organization. Because of scarcity of qualified personnel, it was necessary in the previous biennium to employ a part-time industrial engineer. The Division obtained the services of R. W. Redwine, representative of Eastman, Scott and Company, which handles the State advertising account. Mr. Redwine went back to full-time with the agency after serving through the most pressing war emergency period.

In November, 1945, W. C. Lehew, an engineer with considerable experience in industry, personnel management, sales, and advertising was employed as assistant industrial engineer and worked through the rest of the biennium. Mr. Lehew, however, plans to enter business for himself soon after the close of the biennium.

M. L. Shepherd, who was released from the army as lieutenant-colonel, came with the Division as assistant industrial engineer in March 1946. Mr. Shepherd was on the faculty and the administrative

staff of N. C. State College for a number of years before entering the service. He is a graduate engineer and has done post-graduate work in administrative engineering.

One of the most pressing problems at the close of the biennium was that of finding a suitable staff to carry on the Rural Industries promotional program. A fuller account of this activity will be given in another part of this report.

GENERAL ACTIVITIES

Glesinger Report: Dr. Egon Glesinger, a forest economist with considerable European background, was employed early in 1945 to make a study of forest conditions in the State from the viewpoint of proposing a long-time utilization program, particularly from the standpoint of utilizing parts of the tree that heretofore have been wasted.

Dr. Glesinger completed his study late in 1944 and his report was issued early in 1945. This report intensified interest in the further development of wood-using industries and it is believed that it will play an important part in future developments. The study was made possible through the particular interest of Governor Broughton and funds made available by Henry Wilson, Morganton furniture manufacturer.

Analytical and General Activities: Because of the large number of industrial prospects which have been served during these two years, the amount of general long-range research has been limited. The time spent with individual prospects is often duplicated or surpassed by research to fit the individual requirements. The requests on the part of the industrialists range from the simple to the intricate and involved.

As an example, a large metal working company initiated a study of sites in connection with expansion plans. A representative of the company was taken on a tour of inspection through a considerable part of the State. On his departure, the engineer left a questionnaire which he stated would govern, to a considerable extent along with his personal observations, the final decision of the company.

Questions propounded by the company covered six pages and the Division was requested to fill out one for each of several communities. The answers involved the expenditure of a number of days on each. In addition, the engineer suggested that a brochure for each community would be helpful and go a long way toward determining upon a site. It happens that there was not an active Chamber of Commerce in any of the towns receiving major consideration and the duty of providing the information devolved largely upon the Division. The time of one man for more than a week was required to fill this demand. More than the normal amount of attention was devoted to this prospect because the industry would be particularly desirable as it would help to diversify the State's industrial structure.

Industrial Directory: The Division assembled basic information for the revision of the industrial directory printed in 1938, but with the

issuance of a list of manufacturers by the Department of Labor in 1944, these plans were held in abeyance.

After consultation with the Department of Labor, the Unemployment Compensation Commission, and other interested agencies, it was decided that the Division should proceed with the revision of its list of industries. This list will be issued in mimeographed form by classification units. Thus sections of the list will be available for distribution separately. More often than otherwise, only one section of the list fills the requirement of a request.

The issuance of the directory in sections will enable the Division to expand its service in helping to promote new outlets for North Carolina manufactured products at a considerable saving in cost.

Guilford County Survey: In 1945, the Division coöperated with the State Planning Board and local organizations in working out a procedure for a survey of the resources of Guilford County. This study is contemplated as a general appraisal of the resources of the county with the idea that it might be a model.

The Division's participation is to be the compilation of a form for information on industries of the county and assistance in analyzing data gathered in the study for the purpose of stimulating further utilization of raw materials for manufacturing processes.

Literature: Although general plans have been made for a brochure on industrial advantages and opportunities in the State, it has not been practical to complete the undertaking.

One member of the staff devoted considerable attention to the compilation of materials for the proposed booklet but, after this engineer left the employment of the Department, facilities to complete the work have not been available.

Municipal Data: The compilation of basic data by towns which was started last biennium has been continued. This is carried on as a part-time job with the office force shifting into this activity during slack periods. A special sheet was devised for the purpose. These data are for ready office reference and preliminary information for prospects.

Market Data: Considerable time is devoted in the Division to activities directed toward the expansion of markets for North Carolina products. New outlets for North Carolina's manufactured products and raw materials are being constantly found as a result of information furnished through the Division.

A six-month sample of inquiries and their subjects which were answered by the Division is as follows: Textile, 17; Timber Resources, 129; Plant Location, 77; Furniture and Finished Wood Products, 16; Wearing Apparel, 6; Dinnerware and Pottery, 28; General, 67; Lumber, 10; Poultry, 1; Agricultural Products, 7; Silver, 2; Transportation, 2; Tobacco, 2; Pickle, 2; Paper, 1; Catnip, 1; Canneries, 1; Brick and Clay, 1; Food, 1; Drugs, 1; Mining, 1; Labor, 1; Minerals, 2; Iron, 3; Fertilizer, 1; Peanut, 2; Soy Beans, 1; Electricity, 1; Chemicals, 3; Flax, 1; and Plastics, 1. These and others totaled 398. Most of the inquiries could not be answered by simple, readily available facts

but required research and frequent contacts with other sources to supplement data in our files.

Service to Veterans: Every effort has been made in the Division to give the maximum service to veterans who need assistance in setting up their own business or manufacturing plant.

The calls for this service were particularly numerous during the latter part of 1945 and early in 1946 as large numbers were being released from the armed forces and were planning new ventures. Many veterans called in person at the Department in quest of ideas for new lines of endeavor and for information which would help them get started in business. In one six-month period, 47 veterans were assisted.

North Carolina Forest Resources Appraisal: The Division of Commerce and Industry, in its efforts to promote sound development of the forest resources, joined other agencies in the prosecution of this study in March of 1945. The appraisal was made under the direction of the American Forestry Association with this Division, the Division of Forestry, and the School of Forestry of N. C. State College coöperating. It is contemplated that county data will be made available as a result of the study.

N.E.A. Vacation Center: In the summer of 1946, the National Education Association established a vacation center at Bryson City. This center is one of a series planned by the N.E.A. for various sections of the country to give teachers an opportunity to enjoy a planned vacation at a modest cost. The center at Bryson City is the first in the eastern part of the country. The initial number of patrons was small but it is believed that the center will grow steadily and may be the means of attracting additional thousands of visitors to the State each year. There is some likelihood that another center may be established on the coast.

A representative of this Division spent considerable time in helping Paul H. Kinsel, head of the Travel Department of the N.E.A., to find facilities for the center.

Rotary Headquarters: Upon receipt of a report that Rotary International was considering moving its headquarters, Governor R. Gregg Cherry issued a cordial invitation for the consideration of North Carolina. The Division of Commerce and Industry followed through by furnishing information on the State's facilities and its advantages. However, it appears now as if the headquarters will remain in Chicago.

Industrial Building Lists: Manufacturing space has been one of the most severe limitations to the location of industries in North Carolina during the biennium, and the Division has exercised all the ingenuity of which it was capable in seeking means to surmount this difficulty.

The search for existing buildings has been continuous throughout the two-year period. At fairly frequent intervals the State is circularized in an effort to locate manufacturing space. Constant contacts are made with Chambers of Commerce and various civic groups; real

estate agencies are canvassed; and the coöperation of the railroads and power companies is enlisted in locating industrial quarters.

Information assembled as a result of these efforts is tabulated at intervals and issued in mimeographed form. These lists are circulated among developmental agencies and sent directly to prospects. Wherever possible, a representative of the Department inspects the buildings and obtains a description in order that they may be presented most effectively to the prospect.

During the biennium, the 19th in the series of available industrial lists was issued. This particular list carried information on 47 buildings. Although few of the buildings were in what might be classed as good condition and ready for immediate use, the demand is illustrated by removal of 19 from the former list. The utility of these lists is shown by the fact that several industries have been established as a direct result of its circulation and others are believed to have gone into operation as an indirect result.

Scarcity of building materials, rising costs of construction, and Federal regulations proved to be a positive check on industrial construction during the last several months. Numerous projects which had been definitely planned were postponed. This situation is undoubtedly an important factor in the slackening of the number of industrial prospects near the close of the biennium.

In addition to systematic efforts to locate ready-built manufacturing space, the Division has attempted to develop interest on the part of community groups in erecting industrial buildings for lease to manufacturers. It has also encouraged local groups to assist prospects in every practical way in working out building problems. It is encouraging to note that some community construction enterprises have been carried out and building funds have been raised in others. The Division, however, does not encourage gifts or what is known in promotional circles as "concessions" to manufacturers, but it does aim to protect them against exploitation.

Site Studies: One of the most pressing needs of the Division is a thorough study of plant sites in the State and the tabulation of data on the most promising. From time to time, some of this work has been done but there is a definite demand for a State-wide study, listing, and tabulation of site data.

Much of the site data in the files of the Division has been assembled in coöperation with development agencies, but more complete information is needed. A study of this nature has been carried out in Virginia, and, as a result, the promotional agencies have been able to present their sites more completely and effectively and with minimum loss of time. No one can tell exactly the effect this has had in bringing more industries but it is undoubtedly good salesmanship which must inevitably bring results.

The Division is constantly seeking further coöperation from other agencies which are concerned in the development of the State in assembling site information. It is believed that at least one of these proposals will bear fruit within the next several months in the form of a field survey in one section of the State.

PLANT LOCATIONS

Realizing that intelligent and well-guided industrial promotion rests partly on a knowledge of what is being accomplished, the Division in 1945 set about to list, tabulate and classify new and projected industries and expansions. This undertaking was carried out for the calendar year 1945 and for the first half of 1946.

This survey indicates that the rate of industrial expansion, immediately preceding and following the termination of hostilities in World War II was greater than for any similar period on record.

Following is a summary of industrial progress during 1945 and the first six months of 1946:

NEW AND PROPOSED INDUSTRIES—1945

Industry	Number	Approx. Invest.	Approx. No. Workers	Approx. Annual Payrolls
Textile Mill Products.....	78	\$ 34,500,000	9,200	\$ 11,500,000
Food and Kindred Products.....	65	5,350,000	2,190	3,095,000
Furniture and Finished Lumber Products.....	36	2,500,000	1,500	1,800,000
Stone, Clay and Glass Products.....	9	750,000	450	305,000
Paper and Allied Products.....	7	2,250,000	750	1,500,000
Lumber and Timber Basic Products.....	6	750,000	900	825,000
Chemicals and Allied Products.....	3	500,000	400	600,000
Nonferrous Metals and Their Products.....	3	350,000	175	365,000
Machinery, Except Electrical.....	3	300,000	185	300,000
Tobacco Manufacture.....	2	20,000	40	60,500
Miscellaneous Manufacturing Industries.....	13	390,000	380	550,000
TOTAL—NEW INDUSTRIES.....	225	\$ 47,660,000	16,165	\$ 20,930,500

NEW AND PROPOSED EXPANSIONS—1945

Industry	Number	Approx. Invest.	Approx. No. Workers	Approx. Annual Payrolls
Textile Mill Products.....	73	\$ 24,000,000	12,000	\$ 15,000,000
Food and Kindred Products.....	25	1,350,000	590	835,000
Furniture and Finished Lumber Products.....	19	1,750,000	1,300	1,750,000
Paper and Allied Products.....	8	6,500,000	2,250	4,270,000
Chemicals and Allied Products.....	6	500,000	650	950,000
Machinery, Except Electrical.....	5	125,000	200	350,000
Tobacco Manufacture.....	2	450,000	300	450,000
Stone, Clay and Glass Products.....	2	125,000	50	34,000
Electrical Machinery.....	2	65,000	50	120,000
Iron and Steel and Their Products.....	2	50,000	150	280,000
Automobiles and Automotive Equipment.....	2	35,000	15	30,000
Miscellaneous Manufacturing Industries.....	16	1,600,000	1,150	1,750,000
TOTAL—EXPANSIONS.....	162	\$ 36,530,000	18,705	\$ 25,569,000
GRAND TOTAL.....	387	\$ 84,210,000	34,870	\$ 46,499,500

NEW AND PROPOSED INDUSTRIES

First six months of 1946

Industry	Number	Approx. Invest.	Approx. No. Workers	Approx. Annual Payrolls
Textile Mill Products.....	71	\$ 11,500,000	5,250	\$ 8,325,000
Furniture and Finished Lumber Products.....	30	425,000	570	830,000
Apparel and Other Finished Products.....	25	840,000	1,950	3,500,000
Food and Kindred Products.....	15	2,025,000	480	700,000
Stone, Clay and Glass Products.....	9	319,500	170	275,000
Chemicals and Allied Products.....	8	840,000	700	1,030,000
Lumber and Timber Basic Products.....	4	200,000	120	175,000
Machinery, Except Electrical.....	3	30,000	23	45,000
Miscellaneous Manufacturing Industries.....	16	13,180,000	7,755	14,534,000
TOTAL—NEW INDUSTRIES.....	181	\$ 29,359,500	17,018	\$ 29,414,000

NEW AND PROPOSED EXPANSIONS

First six months of 1946

Industry	Number	Approx. Invest.	Approx. No. Workers	Approx. Annual Payrolls
Textile Mill Products.....	66	\$ 27,500,000	10,000	\$ 15,860,000
Food and Kindred Products.....	13	1,225,000	390	570,000
Furniture and Finished Lumber Products.....	5	387,000	210	306,000
Tobacco.....	4	2,000,000	150	195,000
Stone, Clay and Glass Products.....	3	75,000	35	55,000
Apparel and Other Finished Products.....	2	100,000	250	442,000
Miscellaneous Manufacturing Industries.....	7	1,845,000	585	1,097,000
TOTAL—EXPANSIONS.....	100	\$ 33,132,000	11,620	\$ 18,525,000
GRAND TOTAL.....	281	\$ 62,491,500	28,638	\$ 47,939,000
TOTAL FOR 18 MONTHS FROM JANU- ARY 1, 1945 TO JULY 1, 1946—NEW INDUSTRIES AND EXPANSIONS.....	668	\$ 146,701,500	63,508	\$ 94,438,500

Because the location of an industry is seldom, if ever, the accomplishment of any individual or single agency, no attempt has been made to claim definite responsibility on the part of this Division for any specific number of new plants. It is known that the Division has made direct contributions to the location of many of these new plants and indirectly to others. Assistance is constantly being extended to other agencies in working with their prospects, and conversely others repeatedly assist us.

The number of concerns interested in locations during the report period has, no doubt, been the largest since the establishment of the

Division. This naturally means that the time required in direct and indirect contacts has been greater than before. The major activity of our staff has been in working with prospects, leaving little time for general planning and long-range promotion.

From all appearances, major attention must be given to working with prospects during the next few years. At the same time, increasing thought will be devoted to long-range planning and promotion, particularly with the objective of seeking greater diversification of the State's economic structure.

There should be no slackening of the State's effort to attract industry. Competition is keen between the various commonwealths for new manufacturing and commercial concerns, and an effective program will guide many to this State which would otherwise locate elsewhere. If the resources of more than one state are approximately equal, an effective presentation may clinch the deal for the particular one which goes out to accomplish this result.

Mineral Industries: Particular attention was focused throughout the war on increased utilization of North Carolina's varied mineral resources. The Division of Commerce and Industry teamed with the Division of Mineral Resources in seeking more thorough exploration of the State's mineral deposits and their utilization.

Consistently during the past several years, these Divisions have urged the utilization of the millions of tons of olivine as a source of metallic magnesium. Opportunities in this field were repeatedly brought to the attention of governmental officials and private capital during the war, and it is hoped that these efforts may bear fruit in the future. One of the deterring factors was the lack of a proven, economical recovery process. As a result of quickened interest in this mineral, two processes which have wide promise have been worked out. One of these has gone through the pilot stage and it is believed that its feasibility has been satisfactorily demonstrated.

One of the most constructive results of the mineral program has been deeper interest of the U. S. Bureau of Mines in North Carolina.

RURAL INDUSTRIES

The trend of industrial development in the State during past several years has been primarily toward those counties which are already most heavily industrialized. This naturally means that many of the counties are receiving only indirect benefits from new payrolls, additional outlets for raw materials, and operating profits.

Recent studies reveal that 95 per cent of the industry of North Carolina is west of Raleigh. Ten counties provide almost half the industrial employment and these counties contain only about 21 per cent of the State's population. Three classes of industry, textiles, tobacco, and wood products, furnish employment to about 85 per cent of the industrially employed in the State.

These factors emphasize the need for more industrial development in other counties. Economists and public leaders in the State point

out that the increasing mechanization of farms will release large numbers of workers to industry in the future. Most of these will be forced to migrate to find work if nearby employment is not provided.

These conditions emphasize the need of a program which will encourage and assist in the establishment of small manufacturing units located in rural areas, utilizing nearby raw materials, and financed by local capital. Dr. Clarence Poe, editor of the *Progressive Farmer*, has been a leader in this movement.

In the latter part of 1945, Governor R. Gregg Cherry appointed a general committee on Rural Industries, and a meeting of the group was called in Raleigh in November of that year. A plan of procedure, calling for 11 district meetings scattered throughout the State was mapped out at the Raleigh conference and an Operating Committee was appointed. This committee consists of the following: Dr. L. D. Baver, chairman; Paul Kelly, secretary; Felix A. Grisette, Randall B. Etheridge, Dan E. Stewart, Dr. Clarence Poe, T. A. Rochelle, Dr. I. O. Schaub, T. E. Browne.

Administration of the program was subsequently placed under the Division of Commerce and Industry. Although some progress had been made by the end of the biennium, the program had not gotten into full swing, pending the employment of a staff. Because the success of the program depends, to a considerable extent, on the caliber of individuals employed to carry it on, the Division is proceeding carefully in their selection.

However, in spite of the shortage of help, some definite steps have been taken. Under the direction of the Operating Committee, plans have been made for the 11 district meetings; subject matter to be covered has been outlined; and speakers have been tentatively selected.

One of the most constructive contributions to the program to date has been the preparation of a manuscript by W. A. Smith and R. E. Hertzler, of The Southeastern Forest Experiment Station on the "Preservative Treatment of Fence Posts." This was published as Resource-Industry Series No. 1 of the Division. The response was most pleasing as indicated by widespread requests for copies, and comments from many sources. Within sixty days after it became available, some three out of four thousand copies of the publication had been distributed.

The most pleasing result of the appearance of the booklet is the fact that it has created considerable interest in the possibilities as outlined. Several individuals have undertaken further studies of the opportunity outlined in the booklet and some have indicated plans for the construction of plants. There are no records in the Department of the prior existence of any plants of the nature suggested although there are some larger plants for the treatment of telephone and power poles, etc.

At the close of the biennium, several persons were under consideration for the rural industries staff and it is hoped that the program may be in full swing before the end of 1946. Present plans are to complete the series of meetings before the close of the year.

DIVISION OF FORESTRY AND PARKS

The end of World War II and the upsurge of interest in all phases of forestry and State park development has challenged this Division to meet the demands of the citizens of the State. The place of the basic resources of timber and timberland in the economy of the State has reached a peak heretofore unequalled. Timberland owners composed of farmers, pulp and paper companies, lumber companies and investment forest land owners are expecting better forest fire control and better forest management. These vitally interested individuals and other farseeing citizens are looking to the State for leadership and assistance. The State park system must be enlarged and developed to meet the pressure of a greatly increased use of presently inadequate facilities. The report on State parks in the following pages is an indication of the importance of this activity of the State government.

Personnel. With the continuing absence of some of the key men of the Division, due to the war, it was urgent that the services of John S. Holmes as State Forester be continued as long as feasible. Mr. Holmes had been in immediate charge of the State's Forestry work in this Department and in its predecessor departments since June 1, 1909. However, in order to lessen the strain of administrative work, and at his own request, on February 1, 1945, the Board authorized a change in his status from State Forester to Associate State Forester. Effective on the same date William K. Beichler was appointed to the position as State Forester. Beichler had joined the Department July 1, 1927, as District Forester at Asheville, having previously served with the U. S. Forest Service in western North Carolina, and in Minnesota, and with the Maryland State Forest Service. At the time of this appointment as State Forester, Beichler had served since March 1, 1942, as Assistant State Forester in charge of Forest Fire Control.

During the biennium, personnel losses in the Division, especially with respect to technical foresters, were serious; replacements, again particularly of technical personnel, were almost impossible during that war period. The low ebb in the employment of technical foresters by the State Forest Service over the past ten or fifteen years was reached in the spring of 1945. At that time the entire State Forest Service included only four technical foresters in the Raleigh office and two in the field force (the field force representing seven district offices, two forest nurseries and one State forest).

The end of the war permitted the return of T. W. Morse in October 1945, J. R. Spratt in November 1945, and F. H. Claridge in January 1946. These men assumed positions in charge of the Branches of State Parks, Forest Fire Control, and Forest Management, respectively.

On March 1, 1946, W. L. Beasley, Jr., formerly employed with the Division as Associate Forester, returned after four years in the Army.

The establishment of a much needed Branch of Information and Education in the Division had been postponed during his absence. He was assigned as Assistant Forester in charge of this new work; unfortunately, however, he resigned after two months to accept a position in private industry at a considerably better salary.

On June 15, 1946, Mrs. Edna J. Almand resigned as secretary to the State Forester.

During the period between October 1, 1945, and June 30, 1946, technical foresters again became available, as a result of the end of the war. During that period we were able to employ technical District Foresters and Assistant District Foresters to the extent of our authorized budget (District Foresters in eight of the nine district offices, and Assistant District Foresters in three district offices). This total includes the return of former District Forester B. H. Corpening from army service in Europe to our Asheville District office; he was the last of our men to return from the armed services. However, the

MEMBERS OF DIVISION OF FORESTRY AND PARKS IN ARMED SERVICES 1940-46

Name	Entered On Active Duty	Returned to Dept. of C & D	Major Field of Service	Remarks
Wm. L. Beasley, Jr....	March 4, 1942, Private, U. S. Army	March 1, 1946 Captain, U. S. Army	European Theatre	
M. M. Carstarphen...	Oct. 26, 1943 Sp(Fireman) 3rd Cl.	Aug. 19, 1944 Sp(Fireman) 3rd Cl.	Newport, R. I.	
F. H. Claridge.....	Nov. 10, 1940, (1 yr) Recalled Mar. 7, 1942 Captain, U. S. Army	Jan. 16, 1946, Lt. Col., U. S. Army	Camp Plauche, New Orleans, La.	Army Commendation Ribbon
B. H. Corpening.....	Nov. 29, 1942 Private, U. S. Army	July 1, 1946 1st Lt., U. S. Army	European Theatre	Battlefield Commission
Wm. S. Edmunds.....	Sept. 1, 1942 Private, U. S. Army	Jan. 1, 1946 Captain, U. S. Army	A. A. F. Fort Bragg and Shepard Field	
Thomas C. Ellis.....	Dec. 9, 1942 Private, U. S. Army	April 1, 1946 Technician 5th Gr. U. S. Army	Ft. Ord	
Jesse Long.....	June 28, 1944 Apprentice Seaman U. S. Navy	Feb. 1, 1946 Seaman 1st. Class U. S. Navy	Camp Bradford Amphibious Training Base	
Thomas W. Morse....	Mar. 7, 1944 Apprentice Seaman U. S. Navy	Oct. 1, 1945 Boatswains Mate 2nd Cl.—U. S. Navy	Naval Training Station, Norfolk Operating Base	
C. C. Stott.....	Mar. 9, 1941 1st Lt., U. S. Army	Jan. 1, 1941 Major, U. S. Army	N. C. State College Hdqtrs. 2nd Army Memphis, Tenn.	
James R. Speer.....	Sept. 29, 1942 Private, U. S. Army	Mar. 1, 1946 Technician 4th Gr. U. S. Army	Pacific Theatre	
J. R. Spratt.....	Feb. 1, 1943 Lt. (j. g.) U. S. Navy	Nov. 16, 1945 Lt. (Sr. gr.) U. S. Navy	Pacific Theatre	
R. L. Westerfield....	Sept. 30, 1943 Private, U. S. Army	Nov. 7, 1945 Tech. Sergeant U. S. Army	European Theatre	

great expansion in the use of foresters by private forest products industries, together with the much higher salary range offered by such industries and by the Federal Government, made it impossible for us to keep these men. During that same nine months' period, as well as during the several months immediately following the end of the biennium, we experienced a great turnover in this technical personnel; at least five of the newly returned foresters resigned after short service to accept much higher salaries elsewhere.

As is indicated above in regard to the number of District Foresters, the number of District Offices was increased from seven to nine, resulting from legislative authority effective July 1, 1945. The two new offices were established in the fall of 1945, in Sylva in Jackson County and Whiteville in Columbus County.

Legislation. Little change was made in forestry legislation by the General Assembly of 1945. The chief gain was in the increase of funds allotted to forest fire control. The increase of \$72,239 annually over the previous biennium indicates a demand by the public for State-wide protection. The use of this fund is reported elsewhere.

Chapter 1035 Session Laws of 1945. To encourage the establishment of school practice forests in connection with Vocational Agricultural Schools. In order to encourage the study of woodland management as a regular feature in Vocational Agricultural Schools, Representatives Whitfield and Askew introduced a Bill and secured the enactment of this measure. It authorizes the acquisition by gift, purchase or lease for not less than 20 years of a parcel of woodland or open land suitable for forest planting, to be handled by the school in accordance with plans approved by some available publicly employed forester. This law provides a legal and suitable method of acquiring small school forests for educational purposes and calls the attention of the public to a valuable educational feature which already was legal but has heretofore been practiced only to a very limited extent. It was to facilitate the use of such school forests that Circular No. 28, "Practical Forest Management in Vocational Agricultural Schools," by J. S. Holmes, was prepared and printed.

Chapter 407 Session Laws of 1945. This, the only other legal enactment dealing with the work of the Division of Forestry, is an amendment to Chapter 113, Section 34, General Statutes, repealing the exception to that measure which exempted Stokes County from the operation of the eminent domain proceedings for acquisition of land. By this measure the Act of 1941 becomes applicable to the whole State.

Temporary Forest Survey Commission. In order to secure advance study by a representative group of legislators, so that the General Assembly of 1947 could have first hand information on the condition and needs of our forests, this measure was enacted. It provides for the appointment of a commission of two Senators and three Representatives "to prepare a report" designed as a guide for any legislation

the commission may deem necessary to place the forests of this State on a sound sustained yield basis.

Gov. Cherry subsequently appointed the following commission:

Senator Ryan McBryde of Hoke
 Senator Carroll P. Rogers of Polk
 Representative E. S. Askew of Pamlico, *Chairman*
 Representative William F. Marshall of Stokes
 Representative Wilbur H. Currie of Moore

This commission up to July 1946 has held two meetings in the office of the Department of Conservation and Development which by the law is required to furnish such help to the commission as it may be able to supply.

Cutting Practices

In October of 1944, at the invitation of President Korstian of the N. C. Forestry Association, a representative group of Foresters, both privately employed and publicly employed, met in Asheville to consider possible State legislation regarding forest cutting practices. The group agreed upon and drew up a tentative bill for this purpose, which was to be kept available in case the 1945 General Assembly indicated a desire to enact this type of legislation. A called meeting of the Forestry Association was held in Raleigh in February 1945, to discuss the matter. Sentiment at that meeting and also among key members of the Legislature indicated that there was insufficient public demand for this type legislation, and accordingly no such bill was introduced in the 1945 General Assembly. The new Forestry Omnibus Bill (H.R. 6221) introduced into Congress April 30, 1946, would place cutting regulation, as well as a number of other activities which might well be State functions, in the hands of the Federal government if enacted into law.

"Cutting Practices for the Carolinas," prepared by the Appalachian Section of the Society of American Foresters and distributed under a cover of this Department, might well be consulted in this connection.

Study of State Forestry Administration. During 1944 the Society of American Foresters and the Charles Lathrop Pack Forestry Foundation agreed to sponsor jointly a series of surveys of State Forestry Administration in states whose Governors should request such service. It was most fitting that the principal organization meeting governing this proposal was held in October of that year in Biltmore, only two miles from Pack Square and the Pack Public Library in Asheville which had been donated to the city of Asheville by Charles L. Pack's father. It was equally appropriate that North Carolina became the first State in the Union to secure benefit of this survey. At the suggestion of the North Carolina Forestry Association, Governor Broughton extended on October 7, 1944, a cordial invitation to the Society of American Foresters to inaugurate this project in North Carolina. As a result, the survey was begun in the State on November 10, 1944, with Alfred B. Hastings of Maryland in charge of the field work.

Mr. Hastings, who completed the field work in March 1945, was eminently fitted to make this survey, having served as Assistant State Forester in both New Hampshire and Virginia and for the past twenty years having been connected with the Division of State Forestry of the U. S. Forest Service.

The study was undertaken to define and establish standards necessary for the efficient administration of the State's forest resources, and to make recommendations as to how these standards may be met. The Division of Forestry furnished all feasible assistance in the way of information, office space, and occasional field travel to Mr. Hastings in the conduct of his study. The final Report in mimeographed form, as approved by the Society and the Foundation, was received by the Governor and the Department in early October of 1945. In this same form it was formally presented to Governor Cherry in person in his office, and to the Board of Conservation and Development in January of 1946. Shortly thereafter, arrangements were made by the Department to print the Report, and the printed copies were received by the State Forester in July of 1946. It is to be hoped that this thoroughgoing survey, with its 18 specific and listed recommendations, will enjoy the full and careful consideration of the people of the State. It is potentially capable of resulting in great progress for North Carolina's State Forestry Program.

U. S. Forest Service Forest Re-Appraisal. The Chief of the Forest Service in his annual report for 1945 describes this extended study as follows: "It is desirable periodically to make a comprehensive review of the entire forest situation in order to appraise the condition of the resource and its management in terms of present and future needs." Such a reappraisal is now being made. Based on forest survey data and on new studies, this reappraisal will cover the quantity, quality, distribution, growth, and drain of the forest resources in the various regions. It will reconsider future requirements and give special attention to the adequacy of the available stand in each region to sustain the current output of forest products and meet future production goals. The character of forest practices during the war years, and the extent to which forest lands are now under various degrees of forest management, are also being examined. The reappraisal project will also consider various physical, economic, and social aspects of the forest situation that have a bearing on forest depletion, forest employment, progress in good forest management, and public forest policy."

Part of this project involved a rather extensive study of sample counties selected as representing a small group of counties. Cooperation was to be asked from a number of public agencies employing foresters, such as the Soil Conservation Service and the Agricultural Extension Service. The idea was to make one forester responsible for the report on at least one sample county.

In the early summer of 1945 this Department was asked to cooperate by contributing some technical help in carrying out this study

and three men were assigned, each to one county. After a couple of days training with E. M. Gaines, State Leader of the Reappraisal project, each forester completed his assigned county by himself and wrote up the report, mailing it to the Regional Office in Atlanta. This assignment was finished before the end of July, P. A. Griffiths covering Alamance County, Frank J. Miller working Pender, and Walter J. Clark doing Nash County. No indication has been received as to when the report will be available.

White Pine Blister Rust. This serious Asiatic enemy of the white pines, introduced from Europe about the beginning of this century, only recently invaded this State, having spread west much more rapidly than south. It was not until the fall of 1945 that the first diseased white pine in North Carolina was found in Ashe County, though diseased Ribes leaves were found in Ashe, Avery, Watauga and McDowell counties as early as 1941. While this disease is fatal to white pine wherever it becomes established, it can be prevented by the eradication of all Ribes (currants and gooseberries) within 900 feet of the nearest pine. This prevention work has been going on in western North Carolina for many years, first with no State financial allotment and then with State aid. The U. S. Division of Plant Quarantine has led this fight, which promises to be effective. Beginning in 1937 the State Department of Agriculture has annually put \$5,000 into this work, the Federal Government guaranteeing to meet this sum with an equal or greater amount.

Our District offices have been instructed to coöperate in this program, so far as possible, especially in the inspection of white pine plantations and proposed planting sites.

Landowners in the mountain region can still feel safe in planting white pine for timber production, except in a few very restricted areas where these Ribes have not yet been exterminated.

The Holmes State Forest Nursery, where the Department grows its white pine seedlings for distribution to landowners, is outside the danger zone yet it is regularly and carefully inspected for this and other diseases. The State Forester, therefore, feels no hesitancy in recommending the planting of white pine in nearly all parts of western North Carolina.

Forest Resources Appraisal of North Carolina. This appraisal in the words of the report is a "project of Nation-wide scope, organized by the American Forestry Association early in 1944. It is a fact finding survey to determine the effects of the war period upon the country's forests productive condition and to study means of improving these conditions."

The Board of Conservation and Development at its semiannual meeting January 1945 gave approval to this coöperative project and authorized the Director to furnish "whatever data and information the Department may have which would be of value to the appraisal project and make such contribution of time of the staff of the Department which may be utilized to the advantage of the project without

detriment to the administration of the proper functions of the Department." This made possible the employment of James Roberts, Washington, D. C., as an office computer on this project for five months at \$100 per month.

The North Carolina Forest Resources Appraisal was begun in March 1945, and the field work completed by the middle of August. The work was undertaken as a cooperative agreement between the North Carolina State College Division of Forestry, the American Forestry Association and this Department. All field work and the development of the report was done by the authors, George K. Slocum, Associate Professor of Forestry, whose services were generously donated to this work by State College, and Charles R. Ross, Regional Consultant, American Forestry Association. A preliminary report on this survey was published in *American Forests* for December, 1945, and a copy of the full typewritten report was furnished this Department in the spring of 1946.

Timber Farms Program. The award of the Timber Farm Certificates to timber land owners who have accomplished outstanding results in the practice of forestry was unavoidably curtailed during the war due to the lack of personnel. The project jointly sponsored by the N. C. Forestry Association and the Southern Pine Association, assisted by the State Forester and Extension Forester and a forester from the U. S. Forest Service, has been an excellent means of stimulating good forestry practices. Appropriate signs are being erected on the properties of those awarded the certificates. To date the following 19 timber land owners have qualified representing a total woodland area of 253,599 acres.

TIMBER FARMS

Name	Address	County	Acreage
Log Cabin Association.....	Sylva, N. C.	Jackson	887
O. W. McManus.....	Gibson, N. C.	Scotland	85
Ben H. Nicholson.....	Cowarts, N. C.	Jackson	21.5
Camp Mfg. Company.....	Franklin, Va.	Hertford	6,346
A. M. Carpenter.....	Rt. 4, Durham, N. C.	Durham	100
Genie Shepherd.....	Rt. 3, Durham, N. C.	Durham	103
B. H. Perry.....	Henderson, N. C.	Franklin	1,000
Mrs. T. B. Williams.....	Ridgeway, N. C.	Warren	25
Lacy L. McAllister.....	Greensboro, N. C.	Anson	1,000
R. L. Stowe.....	Belmont, N. C.	Gaston	50
Rice Gwyn, Jr.....	Longwood, N. C.	Brunswick	2,300
Frank M. Harper.....	Raleigh, N. C.	Wake	45
Colin G. Spencer.....	Carthage, N. C.	Moore	3,727
C. H. Goslen.....	Rt. 1, Pfafftown, N. C.	Forsyth	132
R. C. Enloe.....	Rt. 1, Franklin, N. C.	Macon	147
Duke Power Company.....	Charlotte, N. C.	10 Counties in western N. C.	91,534
K. Clyde Council.....	Wananish, N. C.	Columbus	6,000
Dr. J. A. Allen.....	New London, N. C.	Stanly	97
Riegel Paper Company.....	Bolton, N. C.	Brunswick Columbus	140,000

N. C. Academy of Science. This organization has for a number of years been much interested in the State park and public forest program of this Department, especially from the viewpoint of maintaining natural conditions. It has actively sought the public acquisition of the Dismal Swamp and the "Primeval Forest" with this in mind. Former State Forester Holmes was for several years chairman of its Committee on Conservation. The advantage to our technical personnel of maintaining contact with the leaders in botany and other sciences would seem to warrant continued close affiliation with this group.

Publications. With the reduced personnel in the Division there has been little time for investigations which are a necessary foundation for any worthwhile publication or for the actual writing. Circulars were, however, prepared to meet the demand for information on two features of the work of the Division, as follows:

Cir. 26—"Forest Tree Seedlings and How to Plant Them," by P. A. Griffiths;

Cir. 27—"Hints on Planting Dogwood," by J. S. Holmes

Information sheets have also been prepared and mimeographed for schools and other inquirers dealing with Reforestation, Arbor Day, etc.

Bul. 46—*The Shrubs and Woody Vines of North Carolina* by Dr. M. A. Curtis, republished in August, 1945, with a foreword which gives the reason for making available this interesting old report after being out of print for nearly half a century. These groups of woody plants form an integral and often important part of our forests and a better knowledge of them should be encouraged.

FOREST FIRE CONTROL

The forest area under protection by the State Forest Service increased by approximately 166,995 acres during the period covered by this report. As the following Progress Chart will show, this is due primarily to an increase in the number of protected (or co-operating) counties. Financial coöperation in fire control was continued with the Federal Government under Section 2 of the Clarke-McNary Law, whereby Federal funds are allotted to the several states for fire prevention based largely upon appropriations made available within the states themselves.

It will be noted in the Progress Chart that the Federal appropriation as of June 30, 1945, was considerably larger than that for the preceding year while the State appropriation was actually slightly less. This increase was due entirely to the fact that the over-all Federal appropriation for the entire country was materially increased. Also, it will be noted that for the last year of the biennium considerably more State funds were available which directly resulted in the State being able to qualify for a larger Federal allotment. The State appropriation, under our present system of financial co-operation with the Federal Government, counties and private land-owners, is, therefore, the key to the financial picture.

Supervisory Personnel: As is stated early in this Division's report,

personnel problems were acute during this biennium. This was especially true with our technical forester personnel whose duty it is to supervise both the Fire Control and the Forest Management programs; it was also true with respect to the seasonal manpower we must employ during the fire seasons such as towermen, smokechasers, and fire crews. As the Progress Chart indicates, only one District Forester was left on June 30, 1945. The matter of comparative salaries and wages for State employment and employment in private industry and with the Federal Government is creating a continuing personnel problem for both technical and non-technical personnel as the biennium ends.

The District Offices as of June 30, 1946, are as follows:

District 1—Asheville	District 6—Fayetteville
District 2—Lenoir	District 7—Elizabeth City
District 3—Rockingham	District 8—Whiteville
District 4—New Bern	District 9—Sylva
District 5—Rocky Mount	

As is also indicated early in this report, J. R. Spratt assumed the position of Assistant Forester in charge of Forest Fire Control, upon his return from Naval Service in November of 1945. P. W. Tillman, who had acted in charge of that Branch during Spratt's absence became Chief Forest Inspector in the Fire Control Branch, and W. J. Clark continued as Forest Inspector. Likewise, Archie B. Smith continues as Equipment and Maintenance Supervisor. Effective shortly after the end of the biennium, M. M. Carstarphen was promoted to the position of Law Enforcement Ranger in the Raleigh Office. This position, authorized by the last Legislature but vacant since that time due to personnel shortages, represents a needed supervisor of our fire law enforcement activities throughout the State.

Present Organization: Each of the sixty-three counties under protection has a salaried full-time County Forest Warden. At the beginning of the biennium eleven of these were also County Game Protectors in their respective counties, their salaries being paid jointly by the two Divisions of the Department. During the biennium this combination warden system was abolished and now each protected county has at least one full-time man devoting his time entirely to fire control work. Each County Forest Warden is furnished a ½- or ¾-ton pickup truck for use in his work. In addition to the County Forest Wardens, we have nine full-time Association Rangers, several year-long towermen and towermen-smokechasers and tractor operators.

All Central Office positions in fire control are filled, and consist of the following: Assistant State Forester in charge of fire control, Chief Forest Inspector, Forest Inspector, Law Enforcement Ranger and Equipment Supervisor.

County Coöperation:

The Forest Fire Control program of the Department is still being operated on the basis of county protection units and financial co-

operation by the counties with the Department. This system has gradually built up excellent support among the counties to the extent that 63 of the State's 100 counties were coöperating at the end of the period covered by this report and their contracted appropriations amounted to approximately \$105,000. However, all indications are that complete State-wide protection in all 100 counties will not be achieved under the present system. The reason is that current State and Federal appropriations are much too small to provide a suitable State-wide organization without county funds and it has not been possible for all 100 counties to be placed under coöperative agreement in any one fiscal year.

As brought out in the last report, and in recent reports to the Department's Board, it is believed that the "saturation point" with regard to appropriations from present coöperating counties has just about been reached. This is particularly true in the case of those counties with large forest land areas and small industrialized or farming areas, such counties being sometimes termed the "poor counties." In other words, many counties cannot afford the financial co-operation required to protect adequately their important forest areas under our present system of 50-50 financial coöperation. It seems, therefore, that the State must assume a more important financial position in the fire control program if adequate State-wide forest fire protection is achieved.

PROGRESS CHART

Fire Control Personnel	As of June 30, 1944	As of June 30, 1945	As of June 30, 1946
Central Office Supervisors.....	3	4	5
District Foresters.....	3	1	6
Asst. District Foresters.....			2
Acting District Foresters.....	4	4	2
District Rangers.....	8	7	11
County Forest Wardens.....	61	63	63
Protective Association Rangers.....	8	8	9
Counties Coöperating.....	61	63	63
Private Timberland Owners Coöperating.....	37	37	38
Forest Area under State Protection (acres).....	12,475,329	12,664,871	12,642,324
FINANCES:			
Appropriation by Counties.....	\$ 84,430	\$ 96,130	\$ 105,550
Appropriation by Private Owners.....	12,225	13,186	15,854
Appropriation by State Forest Fire Control.....	103,025	97,010	169,249
Appropriation by Federal Government.....	95,577	130,336	164,720
Special Emergency Appropriation by Federal Government.....	89,855	41,785	2,964
TOTAL APPROPRIATIONS.....	\$ 385,112	\$ 378,447	\$ 458,337
Actual Funds Available Per Acre Protected.....	3.1 cents	3 cents	3.6 cents

NOTE: Adequate and efficient forest fire protection on a State-wide basis could be given to all of the State non-Federal forest area (about 17,000,000 acres) at a cost of about 7 cents per acre per year. This figure results from a Survey made by the Department in coöperation with all other Southern States and with the United States Forest Service.

Aside from the fact that some 37 counties, comprising approximately 4,000,000 acres of the State's nearly 17,000,000 acres of privately owned forest land, have no form of organized forest fire protection, the present protected area of 63 counties or the remaining 13,000,000 acres of non-Federal forest land is receiving only about one-half of adequate protection. A Survey of the cost of adequate forest fire control for the entire nation made in 1945 by the several State forestry organizations in coöperation with the U. S. Forest Service indicates that adequate protection in North Carolina will cost approximately 7½ cents per forest acre per year. As the Progress Chart will show, our protected area at the end of this biennium was receiving only about 3.6 cents per forest acre per year.

Private Coöperation: The policy of financial coöperation with private forest land owners, whereby they pay to the State an annual assessment which is matched with State and Federal funds and used to give more adequate protection to their holdings, was continued during the biennium. The number of private timberland owners partaking in this coöperative arrangement, and the total area of their forest holdings, varied little during the biennium. Although added private coöperation is easily available, particularly from large forest land owners, such as some of the forest products industries, it is believed that desirable and proper growth of the program based upon tax money offers a sounder basis for progress.

Special Emergency Appropriations by the Federal Government: As brought out in the last two biennial reports, early in the war a number of areas in the coastal region were defined by the War Department as Critical Defense Areas which called for an intensification of the fire control program in most coastal counties. This intensification was brought about almost entirely by Federal emergency money appropriated by Congress for the express purpose of forest fire control in designated Critical Defense Areas. As the Progress Chart will show, these Federal emergency appropriations were discontinued with the ending of the war.

TABLE A
COUNTIES COOPERATING AND ANNUAL SUMS MADE
AVAILABLE BY THEM

County	1942-43	1943-44	1944-45	1945-46
Alleghany.....	\$ 750	\$ 750	\$ 750	\$ 975
Anson.....	1,200	1,600	2,000	2,300
Avery.....	1,000	1,000	1,000	1,000
Beaufort.....	1,250	1,500	1,500	2,000
Bertie.....	1,700	1,700	2,000	2,450
Bladen.....	2,000	2,000	2,300	2,300
Brunswick.....	3,000	3,000	3,000	3,000
Buncombe.....	1,300	1,500	1,500	2,000
Burke.....	2,000	2,000	2,000	2,000
Caldwell.....	1,400	1,400	1,800	1,800
Camden.....			1,400	1,400
Chatham.....	900	900	900	1,200
Cherokee.....	1,000	1,000	1,100	1,200
Columbus.....	2,250	3,000	3,000	3,000
Craven.....	1,500	2,000	2,000	2,000
Cumberland.....	1,800	1,800	2,200	2,400
Dare.....	1,200	1,200	1,500	1,750
Durham.....	1,200	1,200	1,200	1,200
Duplin.....	1,800	1,800	2,180	6,000
Edgecombe.....	1,000	1,000	1,250	1,250
Gates.....	1,000	1,000	1,000	1,025
Graham.....	1,000	1,000	1,000	1,200
Greene.....	900	900	900	1,200
Halifax.....	1,200	1,200	1,200	3,000
Harnett.....	1,100	1,100	1,300	1,750
Haywood.....	1,000	1,000	1,200	1,200
Henderson.....	1,050	1,200	1,200	1,200
Hertford.....	900	900	1,200	1,200
Hyde.....			2,000	2,000
Jackson.....	1,000	1,000	1,000	1,500
Jones.....	1,250	1,250		
Johnston.....	1,500	1,500	1,500	1,650
Lee.....	700	700	1,000	1,200
Lenoir.....	800	1,000	2,000	1,500
Macon.....	750	750	750	900
Martin.....	1,700	1,700	2,000	2,350
McDowell.....	1,080	1,080	1,200	1,200
Montgomery.....	1,000	1,000	1,500	1,500
Moore.....	2,200	2,200	3,000	3,250
Nash.....	1,250	1,500	1,500	1,500
Northampton.....	1,250	1,250	1,250	1,250
Onslow.....	1,250	1,250	1,250	1,800
Orange.....		1,200	1,200	1,200
Pamlico.....	1,500	1,500	2,500	1,500
Perquimans.....		1,200	1,200	1,500
Pitt.....	1,200	1,350	1,350	1,350
Polk.....	1,100	1,200	1,200	1,200
Pender.....	1,615	1,500	1,500	1,500
Richmond.....	1,500	1,500	1,800	2,200
Robeson.....	2,000	2,000	2,000	2,000
Rutherford.....	2,000	2,000	2,000	2,000
Sampson.....	2 000	1,750	2,000	2,000

TABLE A—Continued

County	1942-43	1943-44	1944-45	1945-46
Scotland.....	\$ 1,000	\$ 1,000	\$ 1,250	\$ 4,800
Surry.....	900	900	1,200	1,200
Swain.....	1,000	1,000	1,000	1,000
Transylvania.....	1,200	1,200	1,200	1,500
Tyrrell.....			1,200	1,200
Warren.....	1,000	1,000	1,500	1,800
Wake.....	1,200	1,200	1,600	2,500
Washington.....	1,500	1,500	2,300	2,600
Watauga.....		1,000		
Wayne.....	1,400	1,400	1,400	1,800
Wilkes.....	1,500	2,000	2,000	2,000
Wilson.....	1,200	1,200	1,200	1,200
Yancey.....	1,000	1,000	1,000	1,000
NUMBER COUNTIES COÖPERATING.....	59	62	63	63

TABLE B
FOREST PROTECTIVE ASSOCIATIONS

Name of Association	Assessment Rate		Location in County	Number Individuals in Associations		Acreage Listed	
	1944-45	1945-46		1944-45	1945-46	1944-45	1945-46
Elk Creek.....	2½	2½	Watauga, Wilkes, Caldwell..	1	1	40,000	40,000
South Mountain...	1	1	Burke, McDowell, Rutherford, Cleveland.....	5	5	34,393	34,393
State College.....	3	3	Onslow, Jones.....	2	1	97,000	84,000
N. C. Pulp Co.		3	Onslow.....		1		13,000
Sandy Run.....	3	3	Onslow.....	1	1	39,477	39,477
Holly Shelter.....	4	4	Pender.....	2	2	15,078	18,382
Orton.....	3	3	Brunswick.....	7	6	48,633	48,633
Overhills.....	1		Hornett, Cumberland, Hoke	2		16,000	
Riegel.....	2	4	Brunswick-Columbus.....	4	4	158,455	158,455
Sou. Brunswick....	4	4	Brunswick-Columbus.....	4	4	20,763	20,763
Waccamaw.....	4	4	Columbus-Bladen.....	10	10	37,684	37,684

TABLE C
LIST OF STATE LOOKOUT TOWERS (to 6-30-46)

Name	Height	County	Date Erected	Built By	Initial Cost	Towerman's House
Mt. Mitchell.....	35'0"	Yancey.....	1927	Donation	\$ 25,000	3-room
High Windy.....	45'9"	Buncombe.....	1934	CCC	969	1-room
Tryon Mountain.....	45'9"	Polk.....	1934	CCC	873	1-room
Spivey Mountain.....	35'0"	Buncombe.....	1928	NCFS	778	1-room
Chambers Mountain.....	45'9"	Haywood.....	1934	CCC	942	1-room
Toxaway Mountain.....	45'9"	Transylvania-Jackson..	1935	CCC	889	1-room
Sassafras Mountain.....	35'0"	Transylvania.....	1932	NCFS & SCFS	750	SCFS home
Corbin Mountain.....	35'0"	Henderson.....	1932	NCFS & SCFS	750	SCFS home
Bearwallow Mountain.....	47'0"	Buncombe-Henderson..	1934	NCFS & CCC	800	1-room
Rendezvous Mountain.....	59'3"	Wilkes.....	1934	CCC	824	3-room
Pore's Knob.....	47'0"	Wilkes.....	1929	NCFS	861	1-room
Hibriten Mountain.....	80'3"	Caldwell.....	1927	NCFS & CCC	1,727	1-room
High Peak.....	59'3"	Burke.....	1934	CCC	981	1-room
Horse Ridge.....	35'0"	Burke.....	1928	NCFS	423	1-room
Biggerstaff Mountain.....	47'9"	Rutherford.....	1934	NCFS & CCC	749	1-room
Pinnacle Mountain.....	45'9"	Rutherford.....	1934	CCC	894	1-room
Roaring Gap.....	59'3"	Alleghany.....	1935	CCC	963	1-room
Scotland.....	72'9"	Scotland.....	1934	CCC	1,249	2-room
Southern Pines.....	72'9"	Moore.....	1934	CCC	991	4-room
Ellerbe.....	59'3"	Richmond.....	1934	CCC	1,273	4-room
Mt. Tirzah.....	72'9"	Person.....	1934	CCC	1,340	2-room
Bayleaf.....	99'9"	Wake.....	1937	CCC	1,761	4-room
Tuscarora.....	99'9"	Craven.....	1934	CCC	1,355	2-room
Wiltmar.....	99'9"	Craven.....	1935	CCC	2,149	3-room
Wilson.....	99'9"	Wilson.....	1935	CCC	1,423	2-room
Dudley.....	99'9"	Wayne.....	1935	CCC	1,746	3-room
Snow Hill.....	86'3"	Greene.....	1934	CCC	1,397	2-room
Everett.....	99'9"	Beaufort.....	1936	CCC	1,410	2-room
Comfort.....	99'9"	Jones.....	1936	CCC	2,001	
Young.....	99'9"	Johnston.....	1936	CCC	1,519	
Earp.....	100'0"	Johnston.....	1936	Private & CCC	1,095	
Greenville.....	99'9"	Pitt.....	1936	CCC	1,574	
Kinston.....	99'9"	Lenoir.....	1937	CCC	1,938	4-room
Dixon.....	120'0"	Onslow.....	1937	CCC	2,459	4-room
Redditt.....	99'9"	Beaufort.....	1936	CCC	1,640	2-room
Deppe.....	120'0"	Onslow.....	1938	CCC	2,478	4-room
Edgecombe.....	93'0"	Edgecombe.....	1932	NCFS	1,029	3-room
Green Cross.....	99'9"	Bertie.....	1934	CCC	1,256	2-room
Woodville.....	80'0"	Bertie.....	1928	NCFS	1,358	2-room
Jackson.....	86'6"	Northampton.....	1934	CCC	1,335	2-room
Thomas.....	93'0"	Hertford.....	1929	NCFS	1,467	2-room
Liles.....	79'6"	Halifax.....	1935	CCC	1,087	2-room
Scotland.....	99'9"	Halifax.....	1934	CCC	1,553	2-room
Swift Creek.....	79'6"	Nash.....	1935	CCC	1,221	2-room
Warren.....	80'0"	Warren.....	1932	NCFS	1,079	2-room
Plymouth.....	99'9"	Washington.....	1936	CCC	1,512	
Foreman.....	99'9"	Martin.....	1936	CCC	1,344	4-room
Camp.....	102'0"	Hertford.....	1928	Private & CCC	1,200	
Hassell.....	99'9"	Martin.....	1936	CCC	1,595	3-room
East Lake.....	120'0"	Dare.....	1938	CCC	3,018	2-room
Palestine.....	60'0"	Cumberland.....	1927	NCFS	1,152	2-room
Cedar Creek.....	99'9"	Cumberland.....	1934	CCC	2,121	1-room
Cameron Hill.....	100'0"	Harnett.....	1938	CCC	2,077	1-room
Mamers.....	72'9"	Harnett.....	1934	CCC	991	2-room

TABLE C—Continued

Name	Height	County	Date Erected	Built By	Initial Cost	Towerman's House
Chadbourn.....	100'0"	Columbus.....	1930	NCFS	\$ 1,100	4-room
Nakina.....	100'0"	Columbus.....	1931	NCFS	1,150	
Waccamaw.....	100'0"	Columbus.....	1929	Private	1,200	4-room
Proctorville.....	99'9"	Robeson.....	1934	CCC	1,281	2-room
Pembroke.....	85'0"	Robeson.....	1928	NCFS	1,396	2-room
Parkton.....	99'9"	Robeson.....	1929	NCFS	1,591	2-room
East Robeson.....	99'9"	Robeson.....	1935	CCC	1,715	2-room
Orton.....	80'0"	Brunswick.....	1931	Private & NCFS	1,100	
Shallotte.....	99'9"	Brunswick.....	1935	CCC	2,123	4-room
Bolivia.....	99'9"	Brunswick.....	1929	NCFS	1,556	4-room
Maco.....	99'9"	Brunswick.....	1936	CCC	1,608	4-room
Jones Lake.....	99'9"	Bladen.....	1935	CCC	1,532	4-room
Rose Hill.....	99'9"	Duplin.....	1936	CCC	1,630	4-room
Newkirk.....	99'9"	Sampson.....	1936	CCC	1,424	4-room
Chinquapin.....	99'9"	Pender.....	1936	CCC	1,824	4-room
Bannerman.....	120'0"	Pender.....	1927	CCC	2,534	
Ward's Corner.....	120'0"	Pender.....	1936	CCC	2,000	4-room
Pink Hill.....	99'9"	Duplin.....	1937	CCC	1,811	
Clinton.....	120'0"	Sampson.....	1937	CCC	3,234	4-room
Williams Lake.....	120'0"	Sampson.....	1937	CCC	2,094	4-room
Knightdale.....	120'0"	Wake.....	1938	CCC	2,781	4-room
Hoffman.....	99'9"	Richmond.....	1937	Resettlement Admin.	1,500	3-room
Hamlet.....	99'9"	Richmond.....	1937	Resettlement Admin.	1,500	3-room
Stumpy Point.....	120'0"	Dare.....	1939	CCC	2,597	
Scuppernong.....	120'0"	Washington.....	1939	CCC	2,728	
Glover.....	100'0"	Nash.....	1940	CCC	1,946	
Riegel.....	120'0"	Brunswick.....	1938	CCC	2,788	4-room
Lagoon.....	100'0"	Bladen.....	1937	Resettlement Admin.	1,521	
Rieh Mountain.....	40'4"	Transylvania.....	1939	CCC	1,851	House on Tower
Hawshaw Mountain.....	45'9"	Avery.....	1934	CCC	1,041	1-room
Big Dugger.....	60'0"	Watauga.....	1941	NCFS & CCC	1,841	2-room
Rocky Point.....	120'0"	Pender.....	1941	CCC	3,031	
Giddenville.....	120'0"	Sampson.....	1942	CCC	2,840	
Pittsboro.....	100'0"	Chatham.....	1940	CCC	1,830	
Huntersville Mtn.....	52'0"	McDowell.....	1940	CCC	1,724	2-room
Apex.....	100'0"	Wake.....	1940	CCC		
Clarkton.....	120'0"	Bladen.....	1941	CCC	2,246	
Chesapeake.....	120'0"	Gates.....	1942	Private	3,317	
Phillips Knob.....	45'9"	Yancey.....	1943	NCFS	597	1-room
Ansonville.....	99'9"	Anson.....	1944	NCFS	2,160	
Lilesville.....	99'9"	Anson.....	1943	NCFS	1,965	
Harrisville.....	99'9"	Montgomery.....	1944	NCFS	2,328	
Winfall.....	99'9"	Perquimans.....	1944	NCFS & USFS	2,625	
South Mills.....	99'9"	Pasquotank.....	1944	NCFS & USFS	2,625	
*Eagle Springs.....	120'0"	Moore.....	1944	NCFS & CCC	2,507	
*Columbus.....	120'0"	Tyrrell.....	1946	NCFS	4,460	
*Scranton.....	120'0"	Hyde.....	1946	NCFS	4,419	

TOTAL TOWERS—101

TOTAL HOUSES—70

*Towers erected this biennium.

NOTE: Five more towers purchased during biennium to be erected this Fiscal Year plus one left by CCC, making total of six towers to be erected this Fiscal Year.

TABLE C-1

FEDERAL TOWERS

The following Federal lookout towers, erected primarily for protection of Federally-owned lands, also overlook areas under protection by the State, and have served to supplement the State's tower system in locating fires on such areas:

UNITED STATES FOREST SERVICE TOWERS

Big Stomp in Cherokee County	Woods Knob in McDowell County
Panther Knob in Cherokee County	Green Knob in McDowell County
Hayoe Bald in Graham County	Chestnut Mountain in Avery County
Teyahalee in Graham County	Sand Mountain in Caldwell County
Wayah Bald in Macon County	Rocky Knob in Caldwell County
Standing Indian in Macon County	Buck Mountain in Montgomery County
Wesser Bald in Macon County	Croatan in Craven County
Satulah Mountain in Macon County	Harlowe in Craven County
Yellow Mountain in Macon County	Island Creek in Jones County
Cowee Bald in Jackson County	Black Swamp in Jones County
Rabun Bald in North Georgia	Pelletier in Carteret County
Rocky Top in North Georgia	Newport in Carteret County
Hightop in Haywood County	Frying Pan Mountain in Haywood County
Sutton Mountain in Haywood County	Rich Mountain in Madison County
Pilot Mountain in Transylvania County	Duckett Top in Madison County
Ferrin Knob in Buncombe County	Devils Nest in Mitchell County
Little Snowball in Buncombe County	Table Rock in Burke County

NATIONAL PARK SERVICE TOWERS

Shuchstack in Swain County	Mount Sterling in Haywood County
High Rocks in Swain County	Spruce Mountain in Haywood County
Frye Mountain in Swain County (in coöperation with Indian Service)	White Rock in Haywood County
Barnett Knob in Swain County (in coöperation with Indian Service)	

UNITED STATES INDIAN SERVICE TOWERS

Lickstone Mountain in Jackson County

State Forest Service Communications: The fire-detection and reporting system of the State Forest Service at the close of the biennium included the following mileage of State-owned telephone lines. These lines connect lookout towers with Forest Wardens and other towers,

or with commercial telephone lines, or both. Practically all our telephone lines are on poles of creosoted pine, and practically all are metallic circuit (2 wire) line.

<i>Forest Service District</i>	<i>Total Mileage of Line</i>
No. 1—Asheville	95.5
No. 2—Lenoir	96.6
No. 3—Rockingham	82.0
No. 4—New Bern	36.9
No. 5—Rocky Mount	34.8
No. 6—Fayetteville	110.2
No. 7—Elizabeth City	34.5
No. 8—Whiteville	371.3
No. 9—Sylva	40.1
Total for State.....	901.9

It will be noted that the total is about 55 miles less than at the same period two years ago. This reduction represents dismantling of several lines no longer needed, due principally to new commercial telephone facilities made available.

The NCFS definitely plans to start in the use of radio for Forest Service Communications during the forthcoming biennium. It is our belief that the use of radio offers a very wide and highly important field in communications work. Our present plan foresees the use of radio for communication between County Forest Wardens and lookout towers largely on a County Unit basis. We do not anticipate much use of more powerful equipment on a District or State-wide basis.

Other Permanent Improvements: The State Forest Service operated at the end of the biennium 101 lookout towers. As indicated in Table C three of them were erected during the biennium. An additional six were purchased and are to be erected during the next biennium.

During the last few months of the biennium we were able to construct five much needed District Warehouses at several of our district headquarters. Also considerable enlargement and improvement was made on existing warehouses at New Bern and Elizabeth City. This gives all our present nine districts fairly adequate and suitable warehouse facilities except District One at Asheville. Definite plans are now underway for the construction of such a building for that District.

The Department's long-time plan for adequate State-wide forest fire control on all non-Federal forest lands calls for a system of approximately 130 State-owned lookout towers and possibly 1,000 miles of telephone line, together, of course, with a complete network of radio communication. As has been consistently done in the past, plans for lookout towers, telephone lines and radio will be integrated and coördinated with those of such Federal agencies as the U. S. Forest Service and the National Park Service which conduct similar programs in protection of Federal forest lands within the State.

TABLE D

LIST OF PRINCIPAL ITEMS OF FIRE-FIGHTING EQUIPMENT

Items of Equipment	Purchased During Biennium	Total on Hand Date of This Report
Automobiles.....	6	24
Trucks, Pick-up.....	19	78
Stake Trucks, 1½ Ton.....		10
Truck-Trailer Units, 10-Ton.....	6	11
Tractors, Crawler.....	7	15
Road Machines.....		2
Fire Line Plows.....	8	20
Pumpers, Power.....	6	8
Pumps, Knapsack.....	354	2,536
Chain Hoists.....	7	10
Electric Drills.....	1	5
Paint Spray Outfits.....	4	4
Bench Grinders (Electric).....	1	5
Bullgraders.....		1
Winches, Tower Erection.....		2
Winches, Crawler Tractor.....	7	7

Fire Fighting Equipment: The acquisition of fire fighting equipment during the first one and one-half years of the biennium was quite difficult. In fact, it was only during the last months of this biennium that we were able to acquire any appreciable amount of equipment of any sort. It was something over which we had no control and it can be said that we fared much better than most other State agencies and much better than many Federal agencies. While the general equipment situation is still not good with particular regard to motor vehicles, we have, as Table D will indicate, added several important items to our equipment stock. For instance, we were able to add considerably to our small fleet of fire line plowing units by the acquisition of crawler tractors, truck-trailer units and fire line plows. We were fortunate in being able to purchase from Government surplus five new crawler tractors which were practically non-existent on the commercial market.

Accomplishments: The Progress Charts in this and the preceding Biennial Reports show the highly gratifying increase in the direct State appropriation for Fire Control from about \$103,000 annually as of June 30, 1944, to about \$169,000 annually as of June 30, 1946. We feel that this accomplishment reflects confidence of the people of the State and of their Legislature in the soundness and importance of the Department's Forest Fire Control program. As is pointed out elsewhere, such increases in the key State appropriation have permitted and actually caused accompanying increases in County and Federal appropriations.

During the period of this report the NCFS carried on, in a very limited way, a fire line plowing program in the Whiteville District.

Improving conditions with respect to equipment have made it possible to plan considerable expansion in our pre-suppression plowing programs during the coming year and such services will be offered land-owners in some twenty of our eastern counties. We refer, of course, to our long-planned program covering any forest lands in protected counties whose owners are willing to pay for such services on a cost basis. It is planned that such services be extended to all eastern counties as additional equipment and manpower become available.

In spite of the fact that the situation with regard to personnel and equipment became acute during the war, the State Forest Service was able not only to "hold its own" but both tangible and intangible results were obtained. As the Progress Chart and several Tables will show, there was a progressive increase in protected area and appropriations, important permanent improvements were constructed and important and improved equipment items added to our list and stock of fire fighting equipment.

Forest Fire Statistics: Fire statistics for the past four fiscal years are given in Table E. In analyzing any such table, it is, of course, necessary to bear in mind the following factors.

1. The funds available to do the job, as against the funds known to be required to do an adequate job.

2. The fact that climatic factors such as the distribution and amount of rainfall, and human factors such as the distribution and intensity of logging operations, establishment of Military camps and maneuver areas, etc., have a continuous bearing upon forest fire control. These variable factors cannot be estimated except in the light of past experience, and therefore without an adequate organization it must be expected that results obtained in forest fire control will vary far more widely than would be the case were such adequate resources available.

The fire season for the fiscal year 1942-43 was about normal though the fall of 1943 was abnormally dry. This resulted in low ground water levels, causing the swamp and peat soil areas of the eastern counties to experience bad ground-burning conditions. The spring of 1944 was fairly normal until the months of May and June when it again became abnormally dry with low ground water levels and the usual high and dry winds that accompany such abnormally dry weather. The fiscal years 1944-45 and 1945-46 were about normal or below. During both years most areas in the State had normal or above normal rainfall. Also, the rainfall was, with the exception of one or two areas, well distributed throughout the fall and spring fire seasons.

The Table of Statistics shows graphically the loss sustained each year from forest fires, even on areas given the existing measure of State Protection. The Department feels that adequate protection, as indicated in the footnote to the foregoing Progress Chart would very materially reduce this annual and wasteful loss.

Conclusion: As is indicated previously in this report, the attainment of the goal of State-wide and adequate forest fire control is still in the future. It is most encouraging to note the greatly increased sup-

port of the Department's program apparent during the past several years on the part of the public in general and of the General Assembly, the forest products industries, and the N. C. Forestry Association in particular.

It is increasingly evident that the citizens of the State are beginning to recognize the fact that forest resources constitute an important portion of the State's wealth and that the State's approximately 18,000,000 acres of forest lands largely support its third ranking industry; namely, forest products, which is exceeded in financial importance only by the textile and tobacco industries.

The Department's close cooperation with the several Federal agencies interested in the control of fire on Federal lands has continued to be highly satisfactory.

TABLE E

FOREST FIRE STATISTICS FOR STATE-PROTECTED AREAS BY FISCAL YEAR

	1942-1943	1943-1944	1944-1945	1945-1946
Area Under Protection—Acres.....	12, 151, 958	12, 515, 116	12, 664, 871	12, 541, 098
NUMBER FIRES BY CLASSES:				
A—Under $\frac{1}{4}$ acre.....	125	135	139	82
B— $\frac{1}{2}$ to 10 acres.....	1, 029	1, 202	970	777
C—11 to 100 acres.....	1, 250	1, 419	1, 180	930
D—101 to 500 acres.....	403	500	402	282
TOTAL.....	2, 807	3, 256	2, 691	2, 071
CAUSES OF FIRES:				
Campers and Hunters.....	188	510	215	107
Debris Burning.....	638	593	605	599
Incendiary.....	565	502	566	413
Lightning.....	26	45	18	6
Lumbering.....	65	78	61	22
Railroads.....	152	173	107	86
Smokers.....	905	1, 081	926	637
Miscellaneous.....	268	271	193	201
TOTAL.....	2, 807	3, 256	2, 691	2, 071
AREA BURNED—ACRES:				
Merchantable Timber.....	55, 071	56, 473	73, 727	21, 508
Reproduction.....	137, 030	135, 286	190, 614	83, 729
Open Grass Land.....	24, 293	25, 720	76, 533	16, 092
TOTAL.....	216, 934	217, 479	340, 874	121, 329
Average Area Per Fire, Acres.....	77	66	127	59
Per Cent of Protected Area Burned.....	1.79%	1.73%	2.69%	0.97%
DAMAGE:				
Merchantable Timber.....	\$ 170, 691	\$ 145, 942	\$ 233, 608	\$ 64, 489
Reproduction.....	218, 066	174, 942	249, 353	111, 457
Other.....	24, 947	74, 735	17, 119	21, 813
TOTAL.....	\$ 413, 704	\$ 395, 625	\$ 500, 080	\$ 197, 759

TABLE E—Continued

	1942-1943	1943-1944	1944-1945	1945-1946
Average Damage Per Fire.....	\$ 147	\$ 121	\$ 186	\$ 95
Total Fire Fighting Costs (Non-Salaried Personnel)	10,375	13,325	14,283	5,792
Average Fire Fighting Costs Per Fire.....	\$ 3.82	\$ 4.09	\$ 9.02	\$ 2.80
LAW ENFORCEMENT:				
Number of Prosecutions.....	216	183	220	200
Number of Convictions.....	206	170	214	188
Courts Costs and Fines.....	\$ 2,491	\$ 2,562	\$ 2,558	\$ 2,208
RESPONSIBLE PARTIES OTHERWISE HANDLED:				
Number Parties Billed for FF Costs.....	192	203	112	108
Number Making Payment.....	184	193	103	103
Amount Received.....	\$ 1,032	\$ 1,189	\$ 593	\$ 682
FF COST BY LANDOWNERS:				
Number of Parties Billed.....	26	11	1	2
Number Making Payment.....	26	11	1	2
Amount Received.....	\$ 232	\$ 45	\$ 6	\$ 15
WARDEN ACTIVITIES:				
Number of Hours Worked.....	293,036	349,598	359,191	246,463
Miles Travelled.....	677,209	749,826	738,685	571,052
Number of Sawmills Visited.....	624	890	674	303
Number of Burning Permits Issued.....	29,626	26,912	32,978	27,756

TABLE F
COMPARISON OF STATE PROTECTED AREAS AND
UNPROTECTED AREAS (BY CALENDAR YEARS)

Federal Lands Protected by Federal Agencies NOT Included	State-Protected Forest Area		Unprotected Forest Area*		Totals for State	
	1944	1945	1944	1945	1944	1945
Forest Area In Acres.....	12,570,000	12,439,871	4,359,726	4,489,855	16,929,726	16,929,726
Number of Fires Reported.....	2,328	2,456	351	552	2,679	3,008
Area Burned—Acres.....	135,245	315,055	87,802	107,243	223,047	422,298
Size of Average Fire Acres.....	58.09	128.28	250.14	194.28	83.25	140.39
Per Cent of Total Forest Area Burned.....	1.08	2.50	2.01	2.38	1.40	2.49
Damage Done by Fires.....	\$ 214,657	\$ 465,363	\$ 281,977	\$ 146,167	\$ 496,634	\$ 611,530

*Figures on fires, damage, etc., for the unprotected areas are obtained by an annual survey in such areas and are, of necessity, only estimates.

NOTE: In connection with the comparisons in the above table, it should be remembered that the State Forest Service has purposely extended its protection activities first to the areas of highest fire hazard and greatest need (the Counties in the Mountain and Coastal Plain regions). This policy will continue; consequently, it is to be expected that as these "bad fire areas" are brought under protection the per cent of area burned in the unprotected areas (as well as the total acreage burned) will decrease in relation to the same figures for the protected areas.

FOREST MANAGEMENT

The past biennium has seen the all out effort for war suddenly converted to an all out effort to establish a just and lasting peace. Both these objectives list full production of timber products as a primary essential.

The compulsion of war was sufficient to secure the needed output but in the ensuing days of peace, production has declined so seriously that there is practically no lumber on the local markets. Will an era of high prices and unlimited demand convince the landowners that intelligent management of their woodlands will pay? A ten year program of information, demonstration and education for citizens of all ages and all occupations should now place forest management on a par with forest fire control, where both together should place North Carolina in the forefront of timber producing states.

The Forest Management Division is entrusted with the following responsibilities:

1. The operation of two State Forest nurseries, one near Clayton, N. C., and the other near Hendersonville, N. C. These nurseries produce forest tree seedlings and distribute them to the landowners of the State at prices not to exceed the actual cost.
2. Services and advice rendered to forest landowners throughout the State on methods best suited to their needs in the harvesting of their timber with the objective of keeping the land productive of a timber crop.
3. The operation of a 36,000 acre forest in Bladen County as a demonstration of the best forestry practices for the region and an example of a profitable forestry enterprise. For several years this forest has paid all operating costs with a surplus of receipts over expenditures, mostly from salvage cuttings.
4. A forestry educational program in the vocational agricultural schools to promote better forestry practices on the farms through education of young farm boys.

Personnel. Frank J. Miller was transferred on July 1, 1945, from the Bladen Lakes State Forest to the Clayton Nursery. Miller is in full charge of this nursery and gives us the much needed technical supervision for full production on this area.

Eric H. Ericson, Jr., graduate technical forester of North Carolina State College, was appointed Forest Supervisor on the Bladen Lakes State Forest, effective August 10, 1945. Ericson has experience in southern forestry, having been with the Union Bag and Paper Company, the Alabama Extension Service and the Timber Production War Project.

Richard A. Morin, a graduate of Michigan University School of Forestry, was appointed Junior Management Assistant on September 15, 1945, to work out of the Raleigh office on private forest management. Morin has experience in private industries having spent some time in Africa on the rubber project of the Firestone Tire and Rubber Company.

After five years absence in the Army, F. H. Claridge resumed his former connection with the Department on January 16, 1946, as Chief of Forest Management. P. A. Griffiths who headed up this Branch during Claridge's absence has now returned to his former rank as chief assistant.

Roger D. Huff, U. S. Forest Service, after serving for more than two years under the immediate direction of the Federal Government in the Timber Production War Project, was restored to his former co-operative relationship with this Department November 1, 1945. His experience in helping North Carolina landowners to market their timber during the war has much increased the value of his services. Huff is again devoting his attention chiefly to the better management of industrial forests.

Mrs. Elsie Eason, Accounting Clerk, resigned December 1, 1944, and was replaced by Mrs. W. F. Bell on April 16, 1945.

Forest Management-Private Lands. During the biennium, assistance and advice to private woodland owners continued although considerably curtailed due to lack of trained personnel. A total of 99,503 acres situated in 38 counties were examined and the 23 owners advised on the best methods to follow in handling their woodlands. In addition, contractors and operators of wood products including timber, pulpwood and poles, have been visited in order to explain the objectives of good forest management and the need for its introduction.

The progress of private forestry in many cases is being hindered by the lack of trained men to do a good job of marking trees to be cut. Heretofore, the two or three trained men of this Division would instruct the owner or his agent on the ground and mark a sample area but could not afford the time nor the funds to carry on. Some contacts have failed because the landowners, anxious to carry out the recommended plan, have been unable to get anyone to mark the tracts. The above situation has been corrected considerably in the last half of this biennium in that the District and Assistant District Foresters have spent some time on Forest Management work, following their return from the Army and the Navy.

Davey Tree Company Land. At a request from the Davey Tree Company officials this Division, coöperating with the T.V.A., made a Forest Management plan for operating the company's 8,662 acres located in Jackson and Haywood counties. The final report on this property was submitted in May 1946, but due to the death of Martin L. Davey, no action has been taken at the end of the biennium.

Forest Management-Public Areas.

Waynesville Watershed. At the request of Ray Morgan, City Attorney for the City of Waynesville, a survey for assistance in the handling of timber on this 8,000 acre watershed was made. This Division, co-operating with the District Forester of the T.V.A., made an intensive survey of this property and submitted recommendations to the City officials in March 1946. To date the City has not acted on these recommendations but indications are that they will go ahead and handle

this property for the dual purpose of producing an ample supply of pure water, along with periodic timber harvests.

Spruce Pine Watershed. With the coöperation of the District Forester of the T.V.A. and at a request from the City officials of the Town of Spruce Pine, an examination of their 400 acre watershed was made. Ample dead chestnut and mature timber were found but due to the water system limitations it was decided that a timber operation should not be undertaken at this time. The City plans to improve its present system and when this is done the watersheds have great possibilities for timber management and water supply.

Winston-Salem Watershed. The City of Winston-Salem requested an investigation of its watershed for the possibility of a timber supply. Recommendations have been submitted and are now under consideration by the City officials.

Mt. Airy Timber Tract. The Town of Mt. Airy has approximately 600 acres of forest land and requested this Department to assist in exploring the possibilities of a timber sale. The lumber was sorely needed for veterans' housing. This Division, assisted by the Extension Service, marked 850,000 board feet for cutting on this area and helped the town in making the sale. At this writing, the marked trees have been sold for \$10 per thousand and cutting will start this fall.

Forest Management Conference. The technical foresters returning from the armed services needed help in becoming re-established so it was decided by the State Forester that a refresher course in Forest Management should be given. This course was held in May, 1946 on the Bladen Lakes State Forest for all the District Foresters, Assistant District Foresters and personnel of the Forest Management Branch. The U. S. Forest Service, South Carolina Forest Service and Duke University coöperated in supplying some of the instruction. The general feeling was that much had been gained from a school of this kind and plans are now being made to enlarge the school and make it an annual affair.

T.V.A. Agreement. Under the date of December 20, 1944, a Memorandum of Understanding between Tennessee Valley Authority and the Department of Conservation and Development, Forestry Division, was entered into. The purpose of this coöperative undertaking is to bring about as rapidly as possible in the Tennessee River watershed the widespread adoption of sound practices of forest management, protection, utilization and reforestation by woodland owners and forest industries.

Forest Tree Nurseries. During the biennium in which were experienced war and peace, labor and food shortages, it was presumed that the demand for forest tree seedlings for reforestation would be greatly reduced. The production at the nurseries was accordingly curtailed; however, the demand far exceeded expectations so shortages were experienced in meeting the demand.

At the end of the war an effort was made to increase the production so that as few applications as possible for trees would be unfilled. The failure of the seed crop in the South and labor shortages made this a difficult job. Despite these handicaps $1\frac{1}{4}$ million tree seedlings were distributed during the last year of the biennium.

Estimates from the U. S. Forest Service, Soil Conservation Service, farmers and large landowners indicate that within the immediate future the demand in North Carolina will be from 15 to 20 million seedlings annually. This means there is an urgent necessity for enlarging the nurseries. The maximum capacity of the Clayton Nursery is 8 to 10 million seedlings annually, and the J. S. Holmes Mountain Nursery is 5 million annually. Plans have been made for this expansion which will depend on the appropriations available. Without exception all the other Southern states are expanding their facilities, some to a 30 million seedling capacity annually.

The great increase in the demand for forest planting stock is attributable to the culmination of a long period of education and demonstration in the value of reforestation of idle land. The establishment of the nursery program in 1926 was accompanied by a great deal of uncertainty due to the necessity of selling a new idea. As the earlier plantations are reaching commercial size, the landowners of the State are ready to accept reforestation as a part of the economy of the State. The war and reconversion period have emphasized the necessity of an adequate supply of all forest products. Reports on the growth of some of the older plantations are available and are very encouraging.

Federal Coöperation. Since July 1, 1925, funds have been received from the Federal Government for the production of forest planting stock under the Clarke-McNary Act, Section 4. These funds amounted to \$1,800 per year for the two years of the biennium. On October 5, 1944, additional funds were made available to the State under the Norris-Doxey Farm Forestry Act. This amounts to \$800 annually.

Clayton Nursery. This forest nursery is located one mile west of Clayton on Highway 70. This property consists of 314 acres with some 30 acres of cleared land devoted to the production of forest tree seedlings. The balance of the land is in demonstrational forest plantations and woodland. In the spring of 1946, 37.5 acres of idle land were planted with 34,500 forest trees of different species. To date there are 70 acres in forest plantations representing many species and age classes. This was accomplished by planting 64,202 forest tree seedlings. The results are an example of the desirability of planting idle land with forest trees.

Frank J. Miller is in direct charge of this nursery, assisted by Moody Clemmons. Miller gives the much needed technical supervision at this nursery.

In May, 1946 a new Oliver tractor was purchased and delivered at this nursery. The old Oliver, purchased in 1938, was transferred to the Holmes mountain nursery.

The physical condition of the Clayton Nursery has been maintained and a variety of cover crops have been used on that part of the nursery not in seedling production.

Holmes Mountain Nursery. This nursery, named for former State Forester J. S. Holmes, who was largely responsible for its establishment, is located in Henderson County 10 miles west of Hendersonville on the rich bottomland of Crab Creek. This property contains 231 acres with approximately 12 acres of rich bottom and hillside land cleared for the production of forest seedlings. The balance of the area is in demonstrational forest plantations and young forest growth.

Pelzie Hamilton, a near neighbor, is in charge of this nursery which produces principally white pine, yellow poplar and black locust seedlings. The only source of labor is the nearby farm women and men who have been very faithful and effective in operating this nursery. However, with increased production, a technical man will have to be placed at the nursery. This nursery, like the one at Clayton, was reduced during the war years but the demand for seedlings continued to be strong. As it takes two years to raise white pine, the most important species at this nursery, a low production will be experienced for this next year. The unavoidable reduction in production combined with white pine seed crop failures has brought about a reduced output for the two years of the biennium. At the close of the biennium a good white pine seed crop was noted in Jackson and Transylvania counties and plans are being made to collect at least a two years' supply of seed.

The U. S. Bureau of Plant Industry requested coöperation in the fall of 1945, in an experimental project with the establishment of blight resistant chestnut seedlings. A mountain site was approved and two $\frac{1}{4}$ -acre plots were planted on February 20, 1946. In the first $\frac{1}{4}$ -acre plot, 71 chestnut seedlings (*castanea mollissima*) were planted, and on the second $\frac{1}{4}$ -acre 44 chestnut seedlings, which were labeled Dunham chestnut Hybrid plants, were planted. This second plot contains seedlings from an American chestnut in Michigan that for some unknown reason is not affected by the blight. In preparing the site for this planting, all trees 3 feet high and over were girdled in the plot and on an isolated strip 20 feet wide around the plantation.

In March 1944 experimental forest plantations were planted on a 5-acre old field on the nursery property. This planting consisted of 2,500 white pine three year old seedlings and 2,500 yellow poplar one year old seedlings. In addition, 2,000 white pine three year old seedlings were underplanted on a poorly stocked forest area of 2 acres.

Vocational Schools. In keeping with the policy established some years ago, all vocational agricultural teachers were again offered 250 or more tree seedlings free; these trees to be planted on the school forest as part of an Arbor Day observance. Considering that these teachers were devoting most of their energies to full food production, the response for trees was very encouraging. During the biennium, 71 schools planted 11,750 tree seedlings.

TABLE II
DISTRIBUTION OF FOREST TREE SEEDLINGS BY SPECIES

Species	1942-43	1943-44	1944-45	1945-46
Black Locust.....	24,900	7,000	21,575	18,500
Black Walnut.....		2,100	3,400	500
Cork Oak.....		7,660	3,565	
Cypress.....	4,000			
Loblolly Pine.....	696,400	178,950	199,100	1,248,000
Longleaf Pine.....	116,200	92,675	96,100	9,550
Red Cedar.....		3,600	16,450	
Shortleaf Pine.....	75,500	48,325	12,000	187,850
Slash Pine.....	18,000	17,200		196,500
Spruce.....		26,000		
Tulip Poplar.....	13,800	15,000	11,500	1,500
White Pine.....	77,500	42,500	160,200	45,500
Hybrid.....		1,500		
Miscellaneous.....	4,700			
TOTALS.....	1,031,000	442,510	523,890	1,707,900

DISTRIBUTION OF FOREST TREE SEEDLINGS BY CLASS
OF COOPERATORS

Class of Coöperators	Biennium 1944-46		Total 1926-46	
	Number of Coöperators	Number of Trees	Number of Coöperators	Number of Trees
Farmers.....	487	1,041,865	4,022	11,114,825
Industries.....	19	571,075	98	3,029,869
Schools.....	46	43,100	328	1,330,754
State.....	8	189,350	78	365,944
Boy Scouts.....			30	14,680
Clubs.....	1	100	2,478	158,723
Municipalities.....	2	5,050	14	201,724
Soil Conservation Service.....	2	225,000	4	3,922,040
U. S. Forest Service.....	3	41,600	8	1,120,640
Federal.....	5	39,150	9	81,150
Others.....	2	75,500	37	1,458,986
TOTALS.....	575	2,231,790	7,106	22,799,335

In addition to the above, the Tennessee Valley Authority has distributed 13,832,605 forest tree seedlings since its establishment through the planting season 1945-46. This was in the following counties: Avery, Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, Mitchell, Swain, Transylvania, Watauga and Yancey.

Dogwood Planting. Following a request from the Garden Club of North Carolina, Mrs. J. S. Mitchiner, President, for help in starting its State-wide dogwood planting program, the Division agreed to

help distribute planting stock which this Club might be able to secure from commercial nurseries. Governor Cherry endorsed this program by planting a dogwood tree in the southeast quarter of Capitol Square. Due to the enthusiasm of the officers and members of the Club, there were distributed some 15,000 dogwood seedlings. It is estimated that Garden Clubs and individuals in 75 counties planted dogwood trees during January and February 1946. It is the intention of the Club to continue this program for a year or more.

This activity has for its main objective the beautifying of the State and the spread of information about and interest in our State flower. From the point of view of this Department, it helps to conserve and re-establish a valuable timber tree; it teaches the values of forest planting (see Circular 27); and it advertises North Carolina as a tourist resort.

BLADEN LAKES STATE FOREST

This forest comprises 36,000 acres of land located in Bladen County about 5 miles from Elizabethtown. This is operated under a longtime lease from the Federal Government. With more and more need for wood during the war and the need for forest products in the reconversion period, especially lumber and pulpwood, the timber operations on the State forest have been pushed to a capacity of personnel and equipment consistent with good forestry practices. Most of the timber sold has been salvage which could not be marketed under normal conditions.

TABLE III

FINANCIAL REPORT

BLADEN LAKES STATE FOREST TIMBER OPERATION

July 1, 1944-June 30, 1946

Expenditures

Cost of timber sales.....	\$ 31,515.19
Administration salaries	3,167.56
Administration expenses	94.54
Field salaries and labor.....	5,970.68
Field expenses	235.73
Fire suppression and patrol.....	2,196.88
Equipment operation	810.76
Equipment repair	5,881.43
Supplies and materials.....	2,030.51
Equipment (New)	4,116.26
Maintenance—roads and trails.....	730.32
Maintenance—structural	396.26
Forest planting	1,494.96
Well drilling	1,644.00
Deer hunt	17.42
Total	\$ 60,302.50

Receipts

Sawlogs	\$ 53,063.31
Pulpwood	10,599.45
Furniture Squares	1,917.46
Veneer bolts	1,142.06
Crossties	974.45
Posts	914.12
Deer hunt	135.00
Miscellaneous	818.07
Total	\$ 69,563.92

Forest Management Plan. The urgent need for a forest management plan consisting of a timber cruise inventory and an orderly cutting plan for the forest has been realized for some time, but due to lack of funds and trained personnel this was not started in the past. Taking advantage of the G. I. Bill of Rights, four N. C. State College students in forestry were employed on a temporary basis and the field work on the management plan was started in June, 1946.

Planting. The forest planting of non-stocked and under-stocked land on the forest was continued with the planting of 148,000 tree seedlings on 164 acres. This brings the total area planted to date to approximately 1,300 acres. Some plantations are 9 years old and will be ready for pulpwood thinning in another 4 or 5 years.

Forest Fires. The Forest Supervisor reported 10 fires on the area this biennium with a total burn of 685½ acres. Practically all these fires were confined to the bays with little or no timber killed. Approximately 250 miles of fire lines have been plowed on this area and those places of high hazard, namely between the class B highways and fire lines, have been burned as an added precaution.

Equipment. The Federal Government, through the Forest Service, turned over to the State on June 16, 1945, all equipment and small tools on this area which were loaned to us under our lease agreement. Most of the motor equipment is badly worn and we plan to sell it, using the funds to purchase new equipment. In November 1945 two new trucks were purchased for the area. One was a pulpwood truck, the other a log truck with trailer.

Deep Well. Having realized for a long time the need for a better supply of water at the forest headquarters, a contract was finally let to the Carolina Drilling and Equipment Company at Sanford, N. C., on November 20, 1944. Actual drilling of this 6-inch well did not start until March 1945. During the drilling several layers of water were encountered, but the flow and quality were not usable. Good water was finally reached at 334 feet in coarse sand at a cost of \$1,641 for the drilling, screen and capping of the well.

Deer Hunt. Two deer hunts were held during the biennium, with a take of 24 male deer legally killed. Also killed were 2 doe deer,

the offenders being duly prosecuted and convicted under the State Law and each being fined \$50 plus court costs.

The results of these two hunts were as good as could be expected and compare favorably with the better deer hunting of this type which takes place in North Carolina. However, observations on these hunts, as well as several others of similar nature which have been conducted in the past by the State, indicate that the State is acting unwisely by engaging in such operations. The Bladen Lakes State Forest area is a game refuge of moderate size and because of the long open seasons deer are well cleaned out around such areas and are prevented from becoming established on adjacent lands.

Dog hunting for deer drives the deer out of the refuge where they are killed by hunters waiting at strategic places on private lands. It is likely that during these deer hunts more deer were killed on the outside of the refuge than were killed by paid hunters on the inside.

From these observations it would appear that hunting on the State Forest should be discontinued for the present.

STATE PARKS AND STATE RECREATIONAL AREAS

OBJECTIVES

The ultimate goal toward which the Branch of State Parks is working is the establishment, development and operation of a system of State parks which will:

1. Provide for the people of North Carolina adequate opportunities for outdoor recreation in natural surroundings.
2. Preserve and protect permanently the most important scenic, historic and scientific sites in the State.
3. Provide interesting and worthwhile attractions and facilities for tourists and thus promote and increase our travel industry.

To reach this goal, these four major objectives must be successfully carried out:

1. Construct at each existing State park the buildings and developments required for a full program of recreational and vacation use. Every one of the present State parks is incompletely developed and not one has the buildings or developments required for even minimum public recreational and vacation use.

2. Select and acquire land for the additional State parks and State recreational areas which are necessary to meet the needs of residents of and visitors to North Carolina for those types of wholesome outdoor recreation which State parks and State recreational areas can so well provide.

3. Plan and construct on these additional State parks and State recreational areas the recreational, public use and service facilities necessary for recreational and vacation use.

4. Operate and maintain the State parks and State recreational areas so that they will render maximum service and benefits to the public.

Adequate financing will be required to reach this goal successfully. So far, the State parks have been very meagerly financed; consequently, progress in establishing, developing and operating State parks has been slow and present developments do not even begin to meet the demands the public is making on State parks. The present twelve areas now included in the North Carolina State Park System are an excellent nucleus on which to build an adequate system of State parks and State recreational areas, but these present areas are themselves inadequately developed and much must be done before they can provide maximum public usefulness.

No conservation program—State, local or National—will be successful unless it places the same emphasis on recreational use of natural resources as on forest fire control, forest management, wildlife protection, flood control and intelligent practices in harvesting natural resources. The State parks are one of the major media through which recreational use of natural resources is provided. Further, State parks are an important tool in conserving human resources—in youth conservation. They play an important part in providing opportunities for wise and wholesome use of leisure time and thus are instrumental in providing lasting social benefits.

GENERAL

During the first year of the biennium and part of the second year, the work of the Branch of State Parks was naturally affected by the war. The polio epidemic in the summer of 1944 also adversely affected State parks operation. Because of the polio epidemic, operation during the summer of 1944 was rather unsuccessful and activities had to be curtailed below even war-time levels. With the lifting of gasoline rationing in August, 1945, there came a sharp increase in use and attendance at State parks. During June, 1946, more people used the State parks than ever before. Despite a very small budget, the difficulties of securing personnel and supplies, and the limited facilities available at the State parks, we were reasonably successful in giving service to the using public.

During the war, State park maintenance had to be curtailed and less than a third of normal protective maintenance had been done. A heavy maintenance program had, therefore, to be undertaken in the fall, winter and spring months following V-J Day. Good progress was made on the maintenance work, but it will take at least another year to reach a satisfactory maintenance level.

PERSONNEL

Many personnel changes occurred in the Branch of State Parks between July 1, 1944 and June 30, 1946. These changes were as follows:

Name	Title	Remarks
Thomas W. Morse.....	Superintendent of State Parks	Reinstated October 3, 1945 after return from service in U. S. Navy.
Rubee J. Pearse.....	Acting Supt. of State Parks	Terminated October 15, 1945 upon return of Supt. of State Parks.
Charlie C. Stott.....	Asst. Supt. of State Parks	Reinstated January 1, 1946 after return from service in U. S. Army.
Raymond M. Sisk.....	Junior Park Ranger, Cliffs of Neuse State Park	Employed April 8, 1946.
Ed Wilson	Senior Park Warden, Mount Mitchell State Park	Resigned April 30, 1946.
John R. Wilson.....	Senior Park Warden, Mount Mitchell State Park	Employed May 1, 1946.
Jesse Long	Junior Park Warden, Fort Macon State Park	Reinstated February 1, 1946 upon return from U. S. Navy.
Carl R. Flinchum.....	Junior Park Warden, Hanging Rock State Park	Employed July 1, 1944.
James R. Speer.....	Junior Park Warden, Hanging Rock State Park	Reinstated March 1, 1946 after return from service in U. S. Army.
John W. King.....	Junior Park Warden, Crabtree Creek State Park	Employed May 1, 1945.
Thomas E. Slater.....	Junior Park Warden, Crabtree Creek State Park	Employed April 1, 1946.
Charlie J. Mills.....	Junior Park Warden, Morrow Mountain State Park	Employed September 20, 1945.
Franklin T. Booth.....	Junior Park Warden, Hanging Rock State Park	Employed July 10, 1945 Resigned October 31, 1945.
Alvern Hall	Park Ranger, Hanging Rock State Park	Employed August 1, 1944 Resigned January 1, 1945.
Raymond C. King.....	Junior Refuge Warden, Crabtree Creek State Park	Employed July 15, 1944 Resigned November 30, 1944.
Lloyd A. Woolard.....	Assistant Park Ranger, Crabtree Creek State Park	Employed January 15, 1945 Resigned October 1, 1945.
Christina Peters	Junior Stenographer-Clerk, Bladen Lakes Land Use Area	Resigned March 21, 1945.
Clarine Brisson	Junior Stenographer-Clerk, Bladen Lakes Land Use Area	Employed April 18, 1945.
James A. Duke.....	Laborer, Crabtree Creek State Park	Employed July 12, 1944 Resigned August 5, 1944.

PRESENT STATE PARKS

Cape Hatteras State Park: Cape Hatteras State Park, located in Dare County, near Buxton, contains 1,200 acres and includes Cape Hatteras itself. The primary purposes for which this State park was established are the preservation of unusual sea coast scenery and historic values, vacation use and outdoor recreation. The major facilities now available include five vacation cabins and excellent surf casting from the shores of the park.

During the war, the park, particularly the cabins, were used by the Coast Guard personnel which operated the Navy radio station near Buxton. The park was also used by the Coast Guard for other war purposes.

Beginning in the spring of 1946, the cabins were operated by Mrs. Maude White of Buxton under a concession agreement with the Department. Under the terms of this agreement, the cabins are available to the public at reasonable rates.

Cape Hatteras State Park is to be turned over to the Federal Government as a part of the Cape Hatteras National Seashore. For this reason, no additional construction work is planned and practically no State funds are being expended in the operation and maintenance of the park.

Crabtree Creek State Park: Crabtree Creek State Park is located in Wake County on Highway 70-A, midway between Raleigh and Durham. Within its 5,120 acres are included Crabtree Creek and several smaller streams. The primary purposes for which this State park was established are the provision of opportunities for outdoor recreation and vacation use and the preservation of scenery typical of the section of the State in which the park is located.

The major facilities available include four complete group camps—three for white and one for Negro use—having a total capacity of 341 persons. A small temporary picnic area, a small building for indoor picnics and some foot trails for hikers are the only facilities available for general public use.

The group camps were reserved for most of the summer of 1944, but the polio epidemic caused the cancellation of many of these reservations, so the use of the camps was severely curtailed. During the summer of 1945, 1,411 individuals (mostly children under 17) from various organizations used the camps for a total of 41 camp weeks. For the summer of 1946, the camps have been reserved for a total of 50 camp weeks. Among the organizations which conduct organized camping programs at the Crabtree Creek State Park Group Camps for one week or more are:

Methodist Church, Board of Education, N. C. Conference,
Durham, N. C.

Raleigh Girl Scouts, Raleigh, N. C.

Rocky Mount Girl Scouts, Rocky Mount, N. C.

Southern Convention of Congregational-Christian Churches,
Elon College, N. C.

Granville Presbytery Pioneers, Kenly, N. C.
 Presbytery of Orange, Greensboro, N. C.
 Y. M. C. A., Durham, N. C.
 First Baptist Church, Burlington, N. C.
 American Red Cross, Southeastern Division, Atlanta, Ga.
 Occoneechee Council, Boy Scouts, Raleigh, N. C.
 Alamance County Girl Scouts, Burlington, N. C.
 Harriet Tubman Branch of Y. W. C. A., Durham, N. C. (Negro)
 Raleigh-Wake County Girl Scouts, Raleigh, N. C. (Negro)
 Occoneechee Council, Boy Scouts, Raleigh, N. C. (Negro)
 Wildlife Conservation Camp, 4-H Clubs, Greensboro, N. C.
 (Negro)
 Alamance County Girl Scouts, Burlington, N. C. (Negro)
 Unit of Work with Colored People, Charlotte, N. C. (Negro)

During the fall and spring months, the group camps are mainly used by various youth, religious and civic organizations for recreational purposes. In the calendar year 1945, over 4,300 persons in almost 200 groups thus used the camps.

During the biennium, one tract of 16 acres was purchased from J. L. Teal, *et als.*, thus eliminating another of the interior holdings within the park. There are still several interior and adjoining tracts, totaling about 500 acres, that must be acquired before this State park can be efficiently controlled and protected. Until these tracts are made part of the State park, it will be almost impossible to effectively administer and protect it.

In the fall of 1945, a comprehensive maintenance program was begun. As far as limited funds permitted, repairs were made to buildings, water systems, sewer systems and equipment. A new well was drilled in the spring of 1946, to overcome the shortage of water at two of the group camps.

Located as it is near Raleigh, Durham and other towns in Wake and Durham counties, Crabtree Creek State Park is much in demand for day use by family groups and individuals but except for the very inadequate picnic facilities, there are no provisions for general public day use. Requests are constantly made for adequate picnic grounds, camp grounds, swimming facilities, vacation cabins and recreation lodge facilities, none of which exist. The public criticizes the fact that this ideally located State park is not developed for public use. The additional major recreational facilities required to meet public demand are:

Picnicking—Adequate picnic areas (one for white and one for Negro use) including tables and benches, fireplaces, picnic shelters, water and toilet facilities; *Swimming*—Swimming pools and bathhouses (one for white and one for Negro use); *Park Roads*—Construction of additional access roads and relocation of existing roads; *Power Line*; *Parking Areas*; *Maintenance and Service Center*—Superintendent's and rangers' quarters, garages, work shops, and equipment and storage buildings; *Camping*—Tent and trailer camp grounds with completely

equipped camp sites. Day camp area; *Vacationing*—20 small house-keeping cabins; *Recreation Lodge*—Building, including restaurant, park headquarters, and rooms for meetings, lectures and other gatherings; *Hiking*—System of marked foot trails; *Nature Study*—Nature trails, natural history museum, trailside exhibits; *Riding*—Stable and bridle trails.

Fort Macon State Park: Fort Macon State Park is located on Bogue banks in Carteret County near Morehead City and Beaufort and includes some two miles of ocean beach and historic Fort Macon. The primary purposes for which this State park was established are the protection and portrayal of historic values, the preservation of a segment of outstanding seashore scenery, and the provision of opportunities for outdoor recreation and vacation use.

During this biennium, Fort Macon State Park has been under lease to the United States Army and until early in 1945, was occupied by troops. This lease provides that the War Department return the State park to the State in the same condition as it was when taken over by the Army. After the Army ceased to use the park, the various installations and temporary buildings constructed by the Army were carefully examined and, except for the water and sewer systems, were found to be unsuitable for State park purposes. It was, therefore, agreed that the War Department remove all of its installations not suitable for State park use and pay the State a lump sum for the cost of restoring Fort Macon State Park to its prewar condition. Estimates of the cost of this restoration have been made by the Branch of State Parks and by the U. S. Army Engineers and negotiations are now under way to decide upon the exact sum the War Department is to pay the State.

During February, 1946, the War Department removed its caretakers from Fort Macon State Park. To protect the property, Jesse Long, who was employed at Fort Macon and Hanging Rock State Parks before entering the Navy, was entered on duty as Junior Park Warden on February 1, 1946.

On June 1, 1945, some 62½ acres, including the bathhouse and beach development at the southern end of the park, were leased to the Marine Corps after the War Department agreed to eliminate this portion of the park from its lease. The Marine Corps is using this section of the park as an Officers' Club for the Marine Corps Air Base at Cherry Point. Under the terms of the lease, it may be renewed annually through June, 1950, and the general public is excluded from using the beach development until then.

During its entire twenty-two year existence as a State park, the State has spent little money at Fort Macon State Park for public use facilities. Practically all development work done there has been financed by Federal funds through the Civilian Conservation Corps and the Works Progress Administration and this development is in an embryonic stage.

To make Fort Macon State Park reasonably adequate for public recreational use, several hundred acres must be added to it and the following recreational facilities must be built:

Picnicking—Picnic area with fireplaces, picnic shelters, tables and benches, and water and toilet facilities; *Camping*—Camp grounds with water and sewer systems for tent and trailer camping; *Boating*—Boat pier; *Vacationing*—20 small housekeeping cabins; *Maintenance and Service Center*—Superintendent's and rangers' quarters, garages, work shop, and equipment and storage buildings; *Roads*—Park access roads; *Parking Areas*; *Group Camping*—Complete camp for organized camping; *Power Line*; *Swimming*—Enlargement of bathhouse; *Nature Study and Hiking*—Trail system, small natural history museum and trailside museums.

Hanging Rock State Park: Hanging Rock State Park is in Stokes County, four miles northeast of Danbury and thirty miles north of Winston-Salem. The 3,865 acres of this park lie in the Sauratown Mountains and include rugged mountain country and such peaks as Hanging Rock and Moore's Knob. Being within easy driving distance of Winston-Salem, Greensboro, High Point, Lexington, Reidsville, Mount Airy and other cities and towns in the upper Piedmont section, Hanging Rock State Park can serve thousands of park users each summer.

The major recreation facilities now available are: *Swimming*—Bathhouse and lake with sand beach and protected water area; *Picnicking*—Picnic area equipped with fireplaces, tables and benches, shelter and barbecue pit; *Hiking*—Partially completed trail system; *Fishing*—Bass and panfish in lake; *Camping*—Limited tent camping permitted. In addition, temporary and somewhat crude facilities for group camping by organized groups are provided in the old CCC camp on leased land adjacent to park.

During the summer of 1944, this State park received excellent attendance despite war-time restrictions and the polio epidemic. The attendance in 1945 was also good, particularly after gasoline rationing ceased. The attendance in June, 1946, far exceeded the attendance in any previous month. During this month, 13,180 persons used the park and there were 5,407 swimmers, 3,785 picnickers, and 154 campers.

Beginning in October, 1945, an intensive maintenance program was started. Within the limits of available funds, repairs were undertaken on buildings, water systems, sewer systems, roads, trails and the swimming beach. Repairs were made to the CCC camp to make it usable for group camping. During the fall months of 1945, the State Highway and Public Works Commission paved the completed portion of the park road—an improvement much appreciated by park visitors.

A serious fire, which burned over about 300 acres within the park and about 600 acres adjacent to it, occurred on April 22-25. This fire would probably not have occurred had land acquisition at the park been completed.

During this biennium, a dispute arose over the location of one of the boundary lines of the park. The Stokes Lumber Company of Walnut Cove which had purchased the timber rights on lands of the J. Spot Taylor estate adjoining the park, disputed the location of one of the boundary lines between the Taylor lands and the park. Though the Stokes Lumber Company did not definitely show the boundary line in question to be located as it claimed, an agreement was made whereby (1) The Stokes Lumber Company was permitted to cut the timber on the 141 acres in dispute; (2) An arbitration board is to be appointed to settle the boundary dispute; (3) If the line previously established as the park boundary is accepted, the Stokes Lumber Company will pay the State for all timber cut on the disputed area at the rate of \$7.00 per 1,000 board feet.

During this biennium (nor since the park was established in 1935) no progress has been made on acquiring the additional land required at Hanging Rock State Park because no funds were available for this purpose. Most seriously needed of all is land for a satisfactory entrance to the park. Now, access to the park is over a dangerous narrow road through private property. Until this and other land is added to the park, development is stalemated.

Development at this, as at all other State parks, is incomplete. All of the present facilities, except the bathhouse, have proved too small for the public use they receive, and the public has requested many recreation facilities which have not been provided. Along with land acquisition, the following additional major facilities are required to make this park serve the public more fully:

Roads—Completion of entrance road and construction of access roads; *Recreation Lodge*—Lodge building with restaurant and rooms for lectures and meetings; *Group Camping*—Complete camp for organized camping; *Vacationing*—30 small housekeeping cabins; *Maintenance and Service Center*—Quarters for superintendent and rangers, garage, work shop, and storage and equipment buildings; *Power Line; Telephone Line; Camping*—Camp grounds for tent and trailer camping; *Boating*—Boathouse and boats on lake; *Picnicking*—Enlargement of present picnic area and development of additional picnic area; *Hiking*—Completion of foot trails; *Nature Study*—Small museum, nature trails, trailside shelters; *Riding*—Stable and bridle trails.

Jones Lake Recreational Area: Jones Lake Recreational Area is within the boundaries of Bladen Lakes State Forest. This Recreational Area, which includes State-owned Jones Lake, is operated solely for Negro use and is the only area in the State Park System so operated. The primary purpose of this area is to provide facilities for wholesome outdoor recreation. The major facilities available include: *Picnicking*—Tables and benches, small shelters; *Swimming*—Bathhouse and lake; *Boating*—Boats and boathouse; *Fishing*—In Jones Lake.

The graph of public use and attendance at Jones Lake Recreational Area follows the same curves as at other North Carolina State Parks: Below normal in 1944, increased attendance in 1945 especially after gasoline rationing was abandoned, and heavy use in June, 1946.

Here, as elsewhere in the State Park System, construction of recreation facilities has lagged far behind public demand. To meet these demands, the following facilities must be constructed:

Group Camping—Complete camp for organized camping; *Picnicking*—Properly planned and located picnic areas equipped with tables and benches, outdoor fireplaces, picnic shelters; *Boating*—Adequate number of safe boats, enlargement of boathouse; *Roads; Parking Areas; Maintenance and Service Center*—Rangers' quarters, garage and work shop; *Swimming*—Swimming pier and enlargement of bathhouse; *Vacationing*—20 inexpensive housekeeping cabins for low cost vacations; *Hiking and Nature Study*—Foot trail system, small museum and trailside exhibits; *Camping*—Camp grounds for tent camping.

Morrow Mountain State Park: Morrow Mountain State Park, seven miles northeast of Albemarle in Stanly County, lies in the Uwharrie Mountains along the Pee Dee River. With its decidedly mountainous appearance and excellent views of the surrounding countryside, this park is one of the most scenic areas in the Piedmont. It was established for the primary purposes of preserving and protecting an outstanding scenic area and providing vacation use and outdoor recreation facilities for the public.

The major facilities available are: *Swimming*—Modern bathhouse and swimming pool; *Picnicking*—Two picnic areas equipped with tables and benches, fireplaces, picnic shelter and toilet facilities; *Hiking*—Partially completed foot trail system; *Recreation Lodge*—Lodge with restaurant and large room for lectures, meetings and other gatherings; *Camping*—Limited tent camping permitted.

During this biennium, public use has followed the same pattern at Morrow Mountain State Park as at the other State parks which have some recreational facilities to offer the public. Public use during the summer of 1944 was below normal because of war restrictions and because the recreational facilities were not operated on account of the polio epidemic. During the summer of 1945, attendance was somewhat better than in previous war years—decidedly so in August when gasoline rationing ceased. In June, 1946, all previous public use and public attendance records were broken and visitors swarmed in to this State park by the thousands. The restaurant in the Recreation Lodge has been operated by the Concessionaire, Tucker Brothers, since June 17, 1945, and the lodge and restaurant have been much used for business and social gatherings. In the month of June, 1946, 14,665 persons used the park, among whom were 4,782 swimmers, 5,090 picnickers, and 163 campers.

Beginning in the fall of 1945, a comprehensive maintenance program was undertaken at Morrow Mountain State Park. Repairs were made to many buildings and utilities that had received little maintenance during the previous biennium.

Here, as elsewhere in the State Park System, development is incomplete. To meet the needs of the thousands of persons who use this park each summer month, the following additional development must be done:

Vacationing—Small housekeeping cabins; *Boating*—Dock, boathouse and boats; *Group Camping*—Complete camp for organized camping; *Camping*—Camp grounds equipped with water and sewer systems and sites for tent and trailer camping; *Maintenance and Service Center*—Superintendent's and rangers' quarters, garage, and work shops. *Picnicking*—Enlargement of present picnic area; *Hiking*—Completion of marked foot trail system; *Nature Study*—Small museum, nature trails, trailside shelters; *Recreation Lodge*—Enlargement of present lodge; *Roads*—Construction of additional access roads; *Parking Areas*—Construction of additional parking area; *Power Line*; *Riding*—Stable and bridle trails.

Mount Mitchell State Park: Within its 1,224 acres in the Black Mountains of Yancey County, Mount Mitchell State Park includes Mount Mitchell, the highest peak in the eastern United States, and virgin spruce and balsam forest. This State park was established for the primary purposes of preserving and protecting the virgin forest and the outstanding scenic values; putting Mount Mitchell in public ownership so that it will always be held for the public; and providing for vacation and limited recreational use. Public use facilities now available include the stone lookout tower on top of Mount Mitchell, a partially completed foot trail system for hiking and nature study and primitive arrangements for a limited amount of rough camping. The park has been kept open for these uses and for sightseeing but, of course, attendance was below normal during the war.

A storage reservoir for the water supply system was built under contract by J. F. Glenn, a Marion contractor. This partially completed construction of the main water supply system begun by the Civilian Conservation Corps. The State Highway and Public Works Commission awarded a contract for the construction of a four and one-half mile length of road connecting Mount Mitchell with the Blue Ridge Parkway and work on the road was begun in the spring of 1946. It is expected to be ready for use by May, 1947, and public access to Mount Mitchell State Park will at last be easy.

The serious problem of land acquisition is still unsolved and will continue to be until money is available for land purchase. The tract at the southern boundary of the park must be purchased to insure proper control and protection of the park entrance.

On May 1, 1946, the Department and the State of North Carolina lost a loyal and conscientious employee when Ed Wilson, for over 19 years Park Warden at Mount Mitchell State Park, resigned because of his health. His deep interest in Mount Mitchell State Park and his unfailingly loyal and conscientious services will be sorely missed.

Although established as a State Park over 30 years ago, little has been done at Mount Mitchell State Park to provide for public use. This is one of the most important tourist attractions in North Carolina but, as at the other State parks, the State has failed to provide funds for the permanent improvements required for public use. To provide reasonably adequate public use, the following things must be built:

Inn—Small inn with restaurant and sleeping accommodations; *Camping*—Camp grounds for tent and trailer camping equipped with tent sites and water and sewer systems; *Picnicking*—Well developed picnic area equipped with tables and benches, fireplaces, shelters, and water and sewer systems; *Maintenance and Service Center*—Rangers' quarters, garage and work shop, storage building; *Power Line*; *Telephone Line*; *Parking Areas*; *Group Camping*—Camp buildings for organized camping; *Hiking*—Completion of foot trail system; *Nature Study*—Nature trails, natural history museum, trailside shelters and exhibits.

Pettigrew State Park: Pettigrew State Park in Washington and Tyrrell counties, five miles from Creswell, is located on the shore of State-owned Lake Phelps and includes portions of two old plantations—Bonarva and Somerset. It has a land area of two hundred acres and a water area of 16,600 acres in Lake Phelps. This State park was established for the primary purposes of restoring, preserving and protecting the historic values of the old plantations and of providing for recreational use of Lake Phelps.

Public use of this State park consists mainly of visiting the Collins House and other historic structures and fishing in Lake Phelps. The fishing has been excellent and many good catches of black bass and panfish have been made. The improvement in fishing is due largely to the restoration of the lake to normal water level. The rise in the water level is due partly to ample rainfall during the past two years and partly to the fact that the gates governing the water level are now operated by the Branch of State Parks.

When the Federal government announced its intention of abandoning operations of the Scuppernong Farms project surrounding this State park, the Department made a formal request to the Farm Security Administration for 300 acres adjoining the Park. This request was not granted and in December, 1945, all Federally owned land adjoining the park was sold at public auction. As has always been the case, no funds were available to purchase this 300 acres and the land passed into private hands.

The Farm Security Administration Community Building was purchased in December, 1945, when all land and buildings were sold at auction by the FSA. This building was located within the boundaries of the park, and it is to be remodelled for use as a small inn. It was planned to begin work as soon as the Community Building was acquired, but so far, it has not been possible to secure the materials for this.

Rebuilding the gates that control the level of Lake Phelps is another project that has been delayed by scarcity of materials. All but one of these gates leak badly and are likely to fail at any time.

Development for public use is incomplete at Pettigrew State Park, and the following additional facilities must be provided:

Inn—Remodelling and enlarging of Community Building as a small hotel to meet demands of anglers for meals and sleeping accommodations; *Camping*—Camp grounds equipped with water and sewer

systems and tent and trailer sites; *Boating*—Docks, boathouse and boats for fishermen; *Maintenance and Service Center*—Superintendent's quarters, garage, work shop; *Historical*—Complete restoration and refurnishing of Collins House and other buildings; *Picnicking*—Picnic area with tables and benches, shelters, fireplaces, water supply and toilets.

Rendezvous Mountain State Park: This State park, located in Wilkes County, 15 miles northwest of Wilkesboro, has an area of 142 acres. During the Revolutionary War, a company of 225 men was selected at and marched from Rendezvous Mountain to fight in the Battle of Kings Mountain. Rendezvous Mountain State Park was donated to the State to commemorate this event. No recreational facilities have been provided and the area, as it now stands, is suited for only the simplest recreational development.

Singletary Lake Group Camp: A part of Bladen Lakes State Forest and operated by the Branch of State Parks for recreational purposes, this area is located on State-owned Singletary Lake. Established for the primary purpose of group camping by organized agencies, it has been partially developed for this purpose, and the group camp there accommodates one hundred campers.

During the summer of 1944, the polio epidemic severely curtailed the use of this area. In the summer of 1945, the area was used for a total of eleven camp weeks. For the summer of 1946, all available camping weeks have been reserved. Among the organizations using this group camp are:

Pioneers Conference, Wilmington Presbytery, Chadbourn, N. C.
 Young Friends Activities Committee, Guilford College, N. C.
 Singletary Lake Bible Conference, Winnabow, N. C.
 Open Road Pioneers Club, Asheboro, N. C.
 Cape Fear Council, Boy Scouts of America, Wilmington, N. C.
 Sunset Park Methodist Church, Wilmington, N. C.
 Greene County 4-H Clubs, Snow Hill, N. C.

A comprehensive maintenance program was planned at this area in the fall of 1945 to make up for the lack of maintenance during the war years. Repairs were made to all buildings, the sewage disposal system was rebuilt and other utilities overhauled.

During the disastrous flood of the Cape Fear River in September, 1945, the Branch of State Parks coöperated with the Red Cross in disaster relief and Singletary Lake Group Camp was used as a refugee center. Boats from this area and Jones Lake Recreational Area were used in rescue work.

Requests for use of this recreational area exceed available facilities. To meet the demands made upon it, the following additional recreational facilities must be built:

Additional Buildings at Present Group Camp—Camp office, craft shop, help's quarters, unit lodge and swimming dock; *Maintenance*

and Service Center—Garage, storage building, work shop; *Group Camp*—Additional complete group camp.

Town Creek Indian Mound: Town Creek Indian Mound is an area of 1.1 acres in Montgomery County at the confluence of Little River and Town Creek. It includes an Indian Mound and part of an Indian Village site and was established for the primary purpose of preserving and protecting the mound and village site and portraying the Indian life connected with them.

This area has been dormant during all of this biennium. No improvements have been made, but it has been periodically visited by the Ranger at Morrow Mountain State Park.

Archaeological excavation and research have revealed this to be one of the most important Indian village sites in the State and when proposed plans for its development are carried out, it will be a very interesting and instructive site. The work that must be done at Town Creek Indian Mound to make its features available to the public include:

Completion of Archaeological Research and Excavation; Acquisition of Additional Land; Restoration of Village Site and Mound; Construction of a Museum; Construction of a Maintenance and Service Center; Construction of Parking Areas.

State Lakes: Of the seven State-owned lakes under the administration of the Department, Jones Lake, Lake Phelps, Singletary Lake and Salters Lake are within the boundaries of State parks or State recreational areas. Administration of these four lakes and of Black Lake which is adjacent to Bladen Lakes State Forest has involved no unusual difficulties or problems.

The Department owns no land around either White Lake or Lake Waccamaw and this, together with the large number of people who use these two State-owned lakes, makes administration difficult. During this biennium and previous years, a temporary Lake Warden has been employed during the summer months at White Lake and the Game Warden has given some time to helping out at Lake Waccamaw. This arrangement is unsatisfactory for two reasons: first, these lakes have no direct supervision for 8 or 9 months each year and, second, there is no continuity of administration. The employment of a Lake Warden on a year-round basis, the employment of a temporary warden during the summer months, the purchase of good patrol boats, and the purchase or rental of a plot of ground at each lake front as a base for the Lake Wardens are all necessary for better administration of these State lakes.

New State Parks: In June, 1945, Cliffs of the Neuse State Park was accepted for inclusion in the State Park System by the Department of Conservation and Development. This 320-acre area was a gift to the State from Lionel Weil of Goldsboro, Mr. and Mrs. A. J. Davis of Mount Olive and other public spirited citizens of Wayne County. Located on the Neuse River in Wayne County, 17 miles southeast of Goldsboro, this State park includes the striking 90-foot-high cliffs

on the banks of the Neuse River and is very interesting botanically.

For ten months, active protection and administration of this State park was hampered by the difficulty of securing the services of a qualified man. Not until April 8, 1946 was a qualified man found to take charge of this State park. On that date, Raymond M. Sisk entered on duty as Junior Park Ranger.

Except for remodelling an old tenant house for temporary ranger's residence and remodelling some old farm buildings for a work shop and garage, such development work as the small amount of money available for that purpose permitted has been delayed by the shortage of materials and labor and by lack of personnel for planning. It was hoped to have a temporary picnic area built and the access road improved in time for use in the summer of 1946 but this proved impossible.

To provide reasonably adequate recreational facilities at this State park, several hundred acres should be added to it and the following permanent improvements constructed:

Entrance Road; Parking Areas; Picnicking—Picnic grounds, including tables and benches, outdoor fireplaces, picnic shelters, water and toilet facilities; *Camping*—Camp grounds for tent and overnight camping with outdoor fireplaces and central washhouse; *Recreation Lodge*—A building including park headquarters and a large room for meetings, lectures and other gatherings; *Swimming*—Bathhouse and swimming pool; *Hiking*—System of foot trails; *Nature Study*—System of nature trails, natural history museum, trailside exhibits; *Maintenance and Service Center*—Ranger's residence, garages, tool and work shops; *Fire Hazard Reduction*—Removal of brush and down timber.

PROPOSED STATE PARKS

South Mountains State Park: The establishment of a State park in the South Mountains of Burke County has been definitely approved, but the preliminary work of actually beginning the establishment was interrupted by the war and has not yet been resumed. This State park should, by all means, be added to the State Park System because it will serve a large section of the State now without State park facilities.

Hiwassee Dam Area: A careful investigation of the Hiwassee Village site showed it to have possibilities as a State park. Meetings are being held with the Tennessee Valley Authority, which owns the area, to determine whether or not it can be secured for a State park and, if it can, under what conditions and terms.

Fort Caswell Area: Fort Caswell was a U. S. Navy installation during the war. Since it apparently is no longer needed for this purpose, efforts have been made to secure it for State park purposes. By itself, this area is too small for a State park, but it might be the nucleus for an ocean front State park.

SURPLUS PROPERTY

By keeping in constant touch with the War Assets Administration and Property Officers at Army, Navy and Marine posts in North

Carolina, the Branch of State Parks has secured much equipment for use in the State parks. Among the items so obtained are hand and power tools, kitchen utensils, dishes, silverware, cots, refrigerators, bedding and many other items useful in maintenance and operation. All of these were bought at low prices.

FEDERAL AID

H. R. 4395, a Bill to provide Federal Aid to State Parks, was introduced in the House by Hon. J. Hardin Peterson of Florida, and is now in the Committee on Public Lands of which Mr. Peterson is Chairman. This bill was drawn up by the National Conference on State Parks after three years of careful study by that organization and the Association of Southeastern State Park Directors. Briefly, it provides that the Federal government aid the states in acquiring, planning and developing State parks and that money for these purposes be granted on a 50-50 matching basis. Passage of the bill will make possible Federal aid to State park programs in a somewhat similar way to that which is now given to State forestry programs. If enacted into law, this bill will greatly advance our State park program.

LEGISLATION

The General Assembly of 1945 amended Chapter 118 of the Public Laws of 1941 making that Act State-wide, thus enabling the State to exercise the power of eminent domain for State park and forestry purposes anywhere in the State.

RECOMMENDATIONS

Public demands on the North Carolina State Parks far exceed facilities available. The standards of development and operation are far below those required for the service and usefulness the citizens of North Carolina expect of their State parks. The steps that must be taken to improve the State Parks System are:

1. Adequately finance the State Parks System. There should be an annual appropriation for operation and maintenance of not less than \$100,000 and a Permanent Improvements budget of at least \$2,500,000.
2. Bring the personnel of the State park organization up to generally-accepted minimum standards.
3. Complete development of *existing* State parks. (Outlines of the additional development needed are given at the end of the reports on each State park.)
4. Complete land acquisition at *existing* State parks.
5. Secure land for new State parks, concentrating on those new State parks needed most.
6. Develop the new State parks.

In carrying out these steps, the policies, procedures and recommendations in the Board-approved *Park, Parkway and Recreational Area Study of North Carolina* (1938) should be followed closely.

DIVISION OF GAME AND INLAND FISHERIES

The last biennial report for the Division of Game and Inland Fisheries was prepared during a period in which hunting and fishing receipts were at a low point. The Division was experiencing difficulties in obtaining manpower and new materials and it was difficult to hold the basic program intact much less to expand. During the last biennium, however, the period covered by this particular report, there has been an expansion in the Division's activities. This was possible because of increased revenue and the return to civilian life of technicians and game protectors who had been in the Armed Forces for several years. This Division is now in a position to carry out more ably than ever before the duty of protecting and restoring wildlife in North Carolina. The following is a brief discussion of some of the more important work that has been carried on during the past two years.

ADMINISTRATION

On July 1, 1945, the Director of the Department, with the approval of the Board, appointed John D. Findlay, formerly Assistant Commissioner, head of the Division. Findlay succeeded Hinton James, who resigned in June, 1945. Following that appointment, in the light of improved working conditions at that time, several administrative changes were put into effect, primarily the formulation of six sections within the Division to handle various fields of activity. Information presented in this report will follow this administrative plan.

FISCAL

Receipts are set up in a separate table and made a part of this report. Disbursements are covered in the Director's report. The Division continued to operate solely on funds received from the sale of various types of hunting, fishing and trapping licenses along with other miscellaneous receipts. No funds were expended for any purpose other than functions of the Division. Esther C. Williamson was assigned to the position of Chief Clerk and L. B. Hopkins, Engineer, was made responsible for all property, including maintenance and construction.

PROTECTION

The law enforcement organization was strengthened by the return of several of the protectors who had been in the Armed Forces. At the same time, all protectors were placed on a full-time basis. In the past a small percentage had been serving as combination forest wardens and game protectors. Salary scales were increased to some extent and more liberal travel allowances were set up for the field officers. Several changes in the general plan for the protection organization came into effect during this period. The State was divided into five divisions and a Chief of Law Enforcement appointed to handle all law enforcement problems. C. D. Kirkpatrick, of Charlotte, formerly Game Protector in Mecklenburg County, was appointed to this position in October, 1945. A supervisor was assigned to each division and the divi-

sion was in turn broken down into districts which were made up of groups of counties. District protectors were then assigned to the various districts, protectors in each district operating as a group or singly as needed.

The following is the prosecution record for the biennium:

July 1, 1944 to June 30, 1945

Number of Cases.....	472
Amount of Fines.....	\$ 3,412.00
Amount of Cost.....	\$ 2,447.69

July 1, 1945 to June 30, 1946

Number of Cases.....	2,079
Amount of Fines.....	\$14,965.76
Amount of Cost.....	\$15,598.00

GAME MANAGEMENT

Wildlife Lands: The Division now has over 400,000 acres of wildlife areas under management. These are as follows:

COÖPERATIVE AREAS

<i>Nantahala National Forest</i>	<i>Location</i>	<i>Acreage</i>
Santeetlah Wildlife Area.....	Graham County	37,168
Fires Creek Wildlife Area.....	Clay County	13,720
Standing Indian Wildlife Area.....	Macon County	28,432
Wayah Bald Wildlife Area.....	Macon County	11,284
<i>Pisgah National Forest</i>	<i>Location</i>	<i>Acreage</i>
Sherwood Forest Wildlife Area.....	Haywood County	30,875
Mt. Mitchell Wildlife Area.....	Yancey and McDowell Counties	25,200
Daniel Boone Wildlife Area.....	Avery, Burke and Caldwell Counties	46,500
Pisgah Game Preserve.....	Henderson, Haywood and Transylvania Counties	100,000
Uwharrie Wildlife Area.....	Montgomery County	35,588
Total.....		328,775

STATE OWNED AREAS

<i>Area</i>	<i>Location</i>	<i>Acreage</i>
Holly Shelter Wildlife Area.....	Pender County	48,470
Angola Wildlife Area.....	Pender County	21,134
Goose Creek Wildlife Area.....	Beaufort County	5,866
Gull Rock Wildlife Area.....	Hyde County	7,500
Total.....		80,970

LEASED AREAS

<i>Name</i>	<i>Location</i>	<i>Acreage</i>
John Pickett Council Refuge.....	Bladen County	3,716
Total Acres All Wildlife Areas.....		413,461

Management of wildlife on these areas during the last two years has featured rigid protection of game and fish; public hunting and fishing; planting of trout in the streams of the mountain areas; field investigations of deer problems; trapping and transplanting of deer; wildlife food and cover improvement; timber management on State owned lands; reorganization of personnel, and plans for establishment and development of additional areas. A rather substantial portion of the larger game animals, such as deer, bear, and wild boar, remaining in the mountains of western North Carolina are to be found on the coöperative areas located on lands of the U. S. Forest Service.

One of the newer areas, the Uwharrie Wildlife Area, appears to be a project of great possibilities. Deer transplanted there from the R. J. Reynolds Estate in Surry County two years ago are doing so well so far that it is expected this project will restore these game animals to the lower part of the huge Yadkin River watershed. Also, this project is not without value to wild turkeys for several flocks of the preferred native type inhabit the refuge and are given particular attention by the law enforcement organization. R. B. Armfield was transferred from the Fisheries Section in January, 1946, to supervise the wildlife lands program.

Propagation: Only one game farm was operated during this period. This was a plant at Fayetteville. During these two years 3,600 quail were released on protected lands.

EDUCATION

The Division's publication, *North Carolina Wildlife Conservation*, was discontinued in the fall of 1945 and was succeeded by the quarterly publication, *Wildlife in North Carolina*, in May, 1946. Other Division publications during the period included *The Norris Lake Fishing Experiment*, *The Uwharrie Deer Project*, *The Wildlife Crop On Your Farm* and a reprint of *Farming for Wildlife*. In addition, Division personnel prepared various feature articles, news releases and other incidental articles on the wildlife conservation work. The scope of the work in this section was expanded to provide training for other Division personnel along educational lines. Gene Wike, formerly teacher and publicity man at Appalachian College, was appointed Publicity Director following his release from the Navy.

FEDERAL AID

Federal Aid In Wildlife Restoration, set up in accordance with the Pittman-Robertson Act of 1937, has been expanded during the period. Several projects suspended during the war have been reinstated and a brief description of each project in progress or initiated during this biennium is given below.

Coördinating Project: The Federal Aid Program is supervised by a Coördinator who handles all details of the program including liaison work with the United States Fish and Wildlife Service, custodian of the Pittman-Robertson funds. The Coördinator acts as consultant on

all projects. Dennis Hart was transferred from his position as Supervising Game Biologist to the position of Federal Aid Coördinator in the spring of 1946 following the resignation of Frank W. Eatman.

Restoration

Soil Conservation Service Coöperative Farm Game Project: This project was set up for the purpose of working through Soil Conservation Districts for small game restoration and has been carried on during the entire two-year period. The purpose of the project is to coöperate with the Soil Conservation Service in farm planning so as to carry to the farmers in the Soil Conservation Service Districts a plan whereby they can fit into their farm program worthwhile wildlife habitat improvement practices. Seed are furnished for planting and this provides not only for actual restoration on the farms but these projects also serve as demonstration areas for other farmers. W. E. McConnaughey, Jr. is Technician in Charge of this project.

Deer Trapping and Transplanting: During this period, 226 deer were trapped on the R. J. Reynolds Estate in Surry County and transplanted to areas which either had no deer, or only a very few animals, but which it was determined could support a deer population. This project was expanded during the spring of 1946 to include trapping on two additional areas and subsequent distribution of deer over a great portion of western North Carolina. Fred Mahan, a graduate in Game Management from Oregon State College, was appointed to the position of Project Leader in early 1946.

Fur Resources Investigation and Survey: Reinstated in the spring of 1946, this project provides for a study of the fur resources of the State, initial work being carried on in the coastal marshes. Later work will be expanded to cover most of the State. The primary purpose of the project is to find ways and means of increasing the annual harvest of fur bearers is increased. Joe C. Rabb, formerly Biologist in Charge of The fur industry in North Carolina approximates one and one-half million dollars annually and can be greatly increased if the population of fur bearers is increased. Joe C. Rabb, formerly Biologist in Charge of this project, returned from the service in the spring of 1946 to resume his work in this field.

Study of Deer Management at Holly Shelter Wildlife Management Area: The purpose of this project is to determine what can be done to increase the production of deer in the many thousands of acres of pocosin lands in eastern North Carolina. The study at present centers on the Holly Shelter Area since it is owned by this Division. Favorable management practices developed on this area can be applied to other areas in eastern North Carolina. The same is true of other information developed through this project. M. P. Hunter, a graduate in Game Management, was assigned to this project in the fall of 1945 but resigned at the end of the biennium.

State-wide Investigation of Wildlife Habitat and Distribution: This project has been set up to gather detailed information as to past and

present land use in North Carolina. A study will be made of the past and present game populations and the hunting pressure that has developed through the years. This is, in effect, an inventory of our present-day wildlife resources. Information gathered will be compiled county by county and set up on a State-wide basis. It will then be used to lay the groundwork for future wildlife management plans in our State. W. L. Hamnett, formerly Biologist with this Division, was appointed Leader of this investigation project upon his return from service in the spring of 1946.

INLAND FISHERIES

During the first three-quarters of the biennium, the Inland Fisheries work was under the supervision of R. B. Armfield. Dr. Willis King, who formerly was in charge of this work, returned to the State in January, 1946, and has resumed the position of Supervisor of Fish Resources. Dr. King served as a Lieutenant in the U. S. Naval Reserve and was stationed in the Pacific. A new member was added to the staff in June, 1946, in the employment of Edward E. Hueske, Junior Biologist. Mr. Hueske is stationed at the State Fish Hatchery near Fayetteville, and will assist in fisheries work in the eastern part of the State. Mr. Hueske is a graduate of Texas A. & M., with a major in fish and wildlife management. During the war he served in the European Theater.

The work of this section is rapidly shifting its emphasis from that of fish culture and hatchery operations to that of management. The management of the State's aquatic resources, in an effort to insure their proper development and use for public fishing, is a very important project and one which requires the coördination of all agencies concerned. A close relation exists between the management of public fishing on the wildlife management areas, such as Lake Mattamuskeet, and the management areas in Pisgah and Nantahala National Forests, and the Inland Fisheries section. The section also coöperates closely with the Biological Readjustment Division of the Tennessee Valley Authority. The latter agency has carried on extensive research on fish populations in the new reservoirs, and has made recommendations to our Division for their management. Contacts are maintained with the U. S. Fish and Wildlife Service with particular reference to the distribution of fish from Federal hatcheries located in North Carolina. All applications for fish submitted to the Federal Government are reviewed by this office and approved before being sent to the Federal Hatchery from which the fish are to be obtained.

The section also maintains contact with the biologists of the Soil Conservation Service and plans for farm pond management are studied jointly by the two agencies. The construction of farm ponds is still a growing feature in this State. Enough experience has been gained to show that ponds which are properly located, constructed, stocked and managed produce the results desired; while ponds that are not properly built or managed often fail to make the desired contribution.

Due to the Division's inability to obtain qualified personnel, it was not possible to carry on any investigational work during this period. Funds for fisheries work are increasing in a very encouraging manner. This increase is due in part to the return of anglers from the Armed Services, to a general increased interest in fishing, and to an act passed by the last legislature which placed county license requirements on a State-wide basis. There still remains, however, the provision which exempts a person fishing with natural bait in his home county from the requirement of buying a fishing license.

The streams and waterways of the State have suffered severely during the war period from an increase in pollution. Some of this was considered essential to the war effort, but it is believed that in many instances the pollution could have been greatly lessened or avoided had steps been taken to insure proper disposal of wastes in planning the establishment of new industries. One of the streams which has suffered the most in recent years is the French Broad River. A full report on the pollution in this watershed has been prepared and published by the TVA.

The several fish hatcheries were operated along the same plan followed in previous years. Emphasis was placed on rearing fewer trout but carrying a large portion of these until they reach the legal length of seven inches. It was difficult to obtain the amount of fresh meats and other feeds required for feeding the fish, also the equipment and supplies necessary to operate the hatcheries. During the last few weeks of the biennium, a new pick-up truck was delivered to each of the hatcheries, as well as several other items which could not be obtained during the war. It was not possible to make more than the most necessary repairs and, as a result, most of the hatcheries are in need of considerable repair and improvement. A brief statement concerning the status of each hatchery follows:

Morrison Fish Hatchery, Waynesville, N. C.

This hatchery was operated satisfactorily during the period covered by this report. The present water system is proving inadequate at critical periods with the result that there is danger of losing a good portion of the fish at such times. Plans are now being evolved which will enable the use of all available water resources which can be brought to the hatchery. The maintenance of a small zoo at the hatchery has been discontinued.

Murphy Fish Hatchery, Marion, N. C.

This small hatchery continues to be one of the most important hatcheries operated by the State. The water is ideal for hatching and rearing rainbow trout. An excellent growth is obtained on trout fingerlings held over the winter season at this hatchery. Faults in original construction make operation of this hatchery more difficult than should be necessary. In addition to providing at least half of the legal length trout released by the State, this hatchery also produces a limited number of bass and bluegill fingerlings. Repairs to several of the dams impounding water at this hatchery are badly needed.

Roaring Gap Hatchery, Roaring Gap, N. C.

Due to prolonged illness of the superintendent and lack of suitable help, the Roaring Gap Hatchery was not operated to the extent of its facilities during the first three-quarters of the biennium. Leo Roberts, who formerly served as superintendent of the Marmon Hatchery and who worked as hatchery assistant at Roaring Gap for several years, returned from service with the U. S. Navy and was placed in charge of the Roaring Gap Hatchery in January, 1946. Mr. Roberts has succeeded in giving the plant a thorough cleaning, has painted all the buildings and redecorated the residence. The hatchery is now stocked with trout to capacity.

Stedman Fish Hatchery, Fayetteville, N. C.

The Stedman Hatchery has continued to produce a good crop of largemouth bass and bluegills in spite of the handicap in water supply which still exists. The 1946 season was one of the best which this hatchery has had for several years. Plans are now being prepared for installing a more adequate pumping system which will supply water to ponds at this hatchery. Plans which call for the construction of several acres of rearing ponds in the Lake Rim basin are being held in suspense for the present.

Mt. Mitchell Rearing Station

This small unit of five rearing pools is operated principally during the summer months. Fish are transferred from other hatcheries and held here for stocking in streams on the Mt. Mitchell Wildlife Management Area. Brook trout do especially well at this station. It is operated as a sub-station from the Marion Hatchery.

Marmon Trout Hatchery, Pineola, N. C.

The State still has this hatchery under lease from the Marmon Estate. It has been operated successfully during the past two years. Water temperatures during the winter season are too low for proper growth of the fish, but natural dirt pools have proven ideal for rearing purposes during the greater part of the year. The State is maintaining the buildings and grounds but is not undertaking improvements pending decision as to whether or not the plant will be purchased. The hatchery is providing a source of fish for stocking streams in the central portion of the State and on the Daniel Boone Wildlife Management Area.

Table Rock Hatchery

This hatchery is under construction and at the present time is approximately fifty per cent complete. The stream has been widened and modified so as to carry flood waters. The spillway for the dam which creates a supply pond has been completed. Also keyways which will insure water tightness of the ponds have been completed. The superintendent's residence is also under construction. This work is being done under an appropriation of \$110,000 which was granted by the 1945 General Assembly. It is expected that the plant will be in operation for the 1948 season.

DISTRIBUTION OF TROUT FROM STATE HATCHERIES

July 1, 1944-June 30, 1945

Species	Number	Pounds
Brook:		
Small Fingerlings.....	2,200	34
Medium Fingerlings.....	13,150	812
Large Fingerlings.....	19,005	4,245
All Brook Trout.....	34,355	5,091
Rainbow:		
Small Fingerlings.....	41,800	256
Medium Fingerlings.....	9,425	721.5
Large Fingerlings.....	32,005	5,140
All Rainbow Trout.....	83,230	6,117.5
Brown:		
Small Fingerlings.....	1,500	70
Medium Fingerlings.....	1,150	98.5
Large Fingerlings.....	14,545	3,996
All Brown Trout.....	17,195	4,164.5
TOTAL ALL TROUT.....	134,780	15,373

Small Fingerlings are 2-3 inches in length.

Medium Fingerlings are 4-5 inches in length.

Large Fingerlings are 6-10 inches in length.

DISTRIBUTION OF TROUT FROM STATE HATCHERIES

July 1, 1945-June 30, 1946

Species	Number	Pounds
Brook:		
Fry.....	30,000	Fry
Small Fingerlings.....	9,500	133.5
Medium Fingerlings.....	21,300	1,266
Large Fingerlings.....	18,460	2,750.5
All Brook Trout.....	79,260	4,150+ Fry
Rainbow:		
Fry.....	30,000	Fry
Small Fingerlings.....	64,556	370
Medium Fingerlings.....	56,128	2,124
Large Fingerlings.....	50,071	9,420.5
All Rainbow Trout.....	200,755	11,914.5+ Fry
Brown:		
Medium Fingerlings.....	2,450	148
Large Fingerlings.....	9,175	1,804
All Brown Trout.....	11,625	1,952
TOTAL ALL TROUT.....	291,640	18,016.5+ Fry

DISTRIBUTION OF WARM-WATER FISH FROM STATE HATCHERIES

July 1, 1944-June 30, 1945

Species	Number	Pounds
Smallmouth Bass:		
Fry.....	20,000	Fry
Small Fingerlings.....	4,300	64
All Smallmouth Bass.....	24,300	64+ Fry
Largemouth Bass:		
Fry.....	56,800	Fry
Small Fingerlings.....	88,513	441
All Largemouth Bass.....	145,313	441+ Fry
Bluegill Sunfish:		
Small Fingerlings.....	382,100	701
Adults.....	700	350
All Bluegill Sunfish.....	382,800	1,051
Robin:		
Small Fingerlings.....	11,000	37
TOTAL, WARM-WATER SPECIES.....	563,413	1,593 + Fry
TOTAL ALL SPECIES.....	698,193	16,966 + Fry

Small fingerlings are 1-3 inches in length.

DISTRIBUTION OF WARM-WATER FISH FROM STATE HATCHERIES

July 1, 1945-June 30, 1946

Species	Number	Pounds
Smallmouth Bass:		
Small Fingerlings.....	1.5-	47
Largemouth Bass:		
Fry.....	100,156	Fry
Small Fingerlings.....	91,997	413.75
All Largemouth Bass.....	192,153	413.75+ Fry
Bluegill Sunfish:		
Small Fingerlings.....	194,620	488
Adults.....	50	38
All Bluegill Sunfish.....	194,670	526
Robin:		
Small Fingerlings.....	20,700	37.5
TOTAL WARM-WATER SPECIES.....	409,048	1,024.25
TOTAL ALL SPECIES.....	700,688	19,040.75+ Fry

DISTRIBUTION OF FISH FROM FEDERAL HATCHERIES IN NORTH CAROLINA WATERS

July 1, 1944-June 30, 1945

Species	Number	Weight (Lbs.)
Brook Trout.....	132,023	4,608.5
Rainbow Trout.....	122,320	3,914
Brown Trout.....	10	15.5
TOTAL TROUT.....	254,353	8,538.0
Largemouth Bass.....	98,797	276
Bluegill Sunfish.....	187,505	662.5
Crappie.....	18,625	116
Rock Bass.....	11,250	23
White Perch.....	25	2.5
White Perch.....	1,035,000	Fry
Yellow Perch.....	1,540,000	Fry
Striped Bass.....	279,000	Fry
Shad.....	260,000	Fry
Total Warm-water Species.....	3,430,202	1,080.0
TOTAL ALL FISH.....	3,684,555	9,618.0+ Fry

NOTE: At the time of preparing this report, report from the U. S. Fish and Wildlife Service covering their distribution for the period January 1 to June 30, 1946, has not been received.

FISHING LICENSE RECEIPTS, 1944

County	Non-Resident License	Non-Resident Permit	State License	State Permit	County License	Total
Alamance.....		4	68	28		\$ 154.00
Alexander.....			27	68		88.00
Alleghany.....	5	14	40	12	118	243.00
Anson.....	2	5	23	20		71.00
Ashe.....	8	1	41	3	328	452.50
Avery.....	32	77	195	29	339	980.50
Beaufort.....		3	75	182		244.00
Bertie.....	2	2	36	11		89.50
Bladen.....	1	2	47	91		146.50
Brunswick.....	1		18	51		66.50
Buncombe.....	13	30	1,530	247	458	3,736.50
Burke.....	1	71	426	878	782	2,149.00
Cabarrus.....			282	260		694.00
Caldwell.....		4	435	41	435	1,329.50
Camden.....	2		5			20.00
Carteret.....			14	2		29.00
Caswell.....	4	1	3	5		29.50
Catawba.....	1	2	613	135	425	1,725.50
Chatham.....			25	16		58.00
Cherokee.....	235	1,347	397	97	769	4,133.50
Chowan.....		3	20	61		73.50
Clay.....	17	154	185	96	546	1,203.00
Cleveland.....			189	158		457.00
Columbus.....	14	39	202	817		921.50
Craven.....	1	3	66	113		196.50
Cumberland.....			146	100		342.00
Currituck.....	99	414	132	301		1,323.50
Dare.....	31	224	78	106		588.00
Davidson.....		2	69	322		301.00
Davie.....			5	28		24.00
Duplin.....		4	53	58		139.00
Durham.....	1		352	161		789.50
Edgecombe.....			46	56		120.00
Forsyth.....			315	240		750.00
Franklin.....			8	2		17.00
Gaston.....			180	76		398.00
Gates.....	8	127	20	105		259.50
Graham.....	113	264	447	117		1,781.50
Granville.....			36	14		79.00
Greene.....			58	263		247.50
Guilford.....	3	1	305	140		696.00
Halifax.....	5	42	165	130		462.00
Harnett.....			216	154		509.00
Haywood.....	34	140	789	293	963	2,997.50
Henderson.....	39	177	423	145	336	1,626.50
Hertford.....	5	7	39	11		115.50
Hoke.....			33	3		67.50
Hyde.....	9	41	121	1,084		870.00
Iredell.....		1	144	92		335.00
Jackson.....	45	120	227	104	403	1,254.00
Johnston.....			122	223		355.50
Jones.....			9	9		22.50
Lee.....	2		62	28		148.00
Lenoir.....	3	5	297	421		824.50
Lincoln.....			83	90		211.00

FISHING LICENSE RECEIPTS, 1944—Continued

County	Non-Resident License	Non-Resident Permit	State License	State Permit	County License	Total
McDowell.....	16	121	220	201	595	\$ 1,336.50
Macon.....	26	111	247	78	489	1,263.00
Madison.....	7	7	82	15	303	516.50
Martin.....			70	102		191.00
Mecklenburg.....			264	67		561.50
Mitchell.....		12	241	119	124	677.50
Montgomery.....			32	28		78.00
Moore.....	1	3	83	70		209.00
Nash.....			136	143		344.50
New Hanover.....	1	9	283	110		635.00
Northampton.....	3	9	81	125		248.50
Onslow.....		1	82	19		174.50
Orange.....		1	53	53		133.50
Pamlico.....		1		23		12.50
Pasquotank.....	2	3	106	1		225.50
Pender.....	1	10	61	90		182.00
Perquimans.....	1	1		1		6.50
Person.....			40			80.00
Pitt.....	1	4	202	195		510.50
Polk.....	124	575	145	438	296	2,000.00
Randolph.....			62	25		136.50
Richmond.....	8	14	145	141		414.50
Robeson.....	5	1	181	65		420.50
Rockingham.....			58	8		120.00
Rowan.....			61	66		155.00
Rutherford.....	141	457	644	1,126	419	3,432.00
Sampson.....		2	27	72		92.00
Scotland.....	2		27	65		96.50
Stanly.....			72	84		186.00
Stokes.....			27	24		66.00
Surry.....	4	1	58	10	45	187.00
Swain.....	19	87	280	140	405	1,217.00
Transylvania.....	16	75	175	114	246	808.00
Tyrrell.....	1	10	14	47		66.50
Union.....		3	42	205		189.50
Vance.....	1		57	9		123.50
Wake.....	2	5	251	67		550.50
Warren.....			4	2		9.00
Washington.....	1	8	28	31		84.50
Watauga.....	8	9	146	29	207	562.50
Wayne.....		6	174	195		451.50
Wilkes.....			133	39	234	519.50
Wilson.....		2	200	222		513.00
Yadkin.....			3	4		8.00
Yancey.....	1	29	157	104	191	591.00
Miscellaneous Sales.....	15		6	20		97.00
TOTAL.....	1,143	4,909	15,402	13,088	9,456	\$ 57,428.50

Lake Mattamuskeet.....	\$ 1,308.50
Western Refuges.....	3,886.75
To Proportionate Part of Combination Licenses from Game to Inland Fisheries.....	18,274.00

GRAND TOTAL.....	\$ 80,897.75
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HUNTING LICENSE RECEIPTS, 1944-45

County	Non-Resident License	Resident License	County License	State Trapper	County Trapper	Combination License	Guide License	Total
Alamance		915	359	10	4	249		\$ 2,974.00
Alexander		91	75			57		428.00
Alleghany	2	12	94	3	7	67		372.00
Anson	1	112	545	2	11	80		1,052.00
Ashe	1	45	254	1	1	35		469.00
Avery	32	191	183		7	80		1,299.00
Beaufort	53	1,292	622	15	42	185	2	4,695.00
Bertie	13	301	1,141	5	41	351		2,088.00
Bladen	11	531	884			181	1	2,659.00
Brunswick		244	524		3	85	1	1,278.00
Buncombe	107	1,476	1,225	5	16	1,034		8,931.00
Burke	3	317	304	4	2	485		2,454.00
Cabarrus		520	207	3	1	394		2,440.00
Caldwell		424	437	9	7	430		2,616.00
Camden	48	199	109	20	16	22		1,385.00
Carteret	35	601	816		8	48	16	2,783.00
Caswell	29	116	195	1	4	13		912.00
Catawba	1	710	261	15		543		3,370.00
Chatham	51	312	275	4	7	104	1	2,007.00
Cherokee	5	202	288		2	149		1,218.00
Chowan	10	422	184	10	8	111		1,557.00
Clay		47	173	2	3	93		558.00
Cleveland	1	530	637	2	6	353		2,789.00
Columbus	32	707	829			383	8	3,912.00
Craven	20	1,429	903	4	38	224	3	4,836.00
Cumberland	4	807	441		10	407		3,356.00
Currituck	777	593	556	3	115	80	148	14,616.00
Dare	91	335	288	6	59	46	6	2,627.00
Davidson	12	815	479	4	7	175		2,840.00
Davie		131	127	4	2	23		474.00
Duplin	1	617	452			336		2,709.00
Durham	5	1,372	146	13	4	647		4,953.00
Edgecombe	3	388	521	11	39	283		2,302.00
Forsyth	3	1,582	344	14	2	465		4,994.00
Franklin	1	185	311	2	13	77		959.00
Gaston		1,237	376	9	7	321		3,854.00
Gates	81	182	392	5	11	71		2,221.00
Graham	25	262	236			89	1	1,407.00
Granville	3	146	155	3	5	78		745.00
Greene	1	150	185	1		268		1,307.00
Guilford	20	1,830	342	6	8	751		6,589.00
Halifax	18	507	724	18	7	332		3,072.00
Harnett		454	254	2	1	375		2,295.00
Haywood	6	448	584	3	2	330		2,573.00
Henderson	32	291	402	14	6	190		2,088.00
Hertford	45	271	277	13	20	156		2,041.00
Hoke	1	259	379			104	5	1,249.00
Hyde	380	403	743	2	45	115	78	8,080.00
Iredell		490	839	6	6	277		2,680.00
Jackson	1	113	148	2	4	174		925.00
Johnston		309	795	5	13	336		2,462.00
Jones	11	347	369	2	4	72	1	1,463.00
Lee	2	376	137	3	5	221		1,601.00
Lenoir	5	496	362	2	25	747		3,726.00
Lincoln		71	49	7	3	114		560.00
McDowell		304	438	2	2	186		1,614.00

HUNTING LICENSE RECEIPTS, 1944-45—Continued

County	Non-Resident License	Resident License	County License	State Trapper	County Trapper	Combination License	Guide License	Total
Macon.....	2	67	499	1	10	127		\$ 1,067.00
Madison.....	34	99	375	2	11	60		1,291.00
Martin.....	3	353	480	15	20	435		2,621.00
Mecklenburg.....	1	2,092	1,491	10	13	644		7,678.00
Mitchell.....	5	162	219	2	2	125		1,003.00
Montgomery.....	2	394	344	1	4	123	1	1,547.00
Moore.....	17	648	224	2	9	159	5	2,301.00
Nash.....	5	700	425	13	19	468		3,381.00
New Hanover.....	4	2,010	239	5	5	743		6,573.00
Northampton.....	26	114	335		10	112		1,309.00
Onslow.....	2	657	660	4	20	209		2,683.00
Orange.....		319	369	4	2	83		1,272.00
Pamlico.....	12	319	446	5	22	5		1,338.00
Pasquotank.....	50	942	217	16	21	168		3,445.00
Pender.....	9	591	935			187		2,813.00
Perquimans.....	5	137	182	2	4	5		560.00
Person.....	3	146	185	3	6	54		705.00
Pitt.....	5	830	937	17	59	547		4,482.00
Polk.....	6	68	268	1	5	153		966.00
Randolph.....	19	564	271	3	4	163		2,190.00
Richmond.....		566	622		17	243	2	2,527.00
Robeson.....	10	716	796			409		3,605.00
Rockingham.....	4	450	423	7	7	115		1,763.00
Rowan.....	2	703	391	8	3	227		2,538.00
Rutherford.....	1	260	767	11	6	404		2,559.00
Sampson.....	9	572	628			223	1	2,581.00
Scotland.....	2	254	524		4	50		1,220.00
Stanly.....		509	244	6	3	209		1,913.00
Stokes.....	3	57	74	1	8	53		411.00
Surry.....		309	189	3	15	93		1,125.00
Swain.....	4	114	193		10	67		702.00
Transylvania.....	62	119	254			108		1,746.00
Tyrrell.....	14	182	139	6	15	8	4	805.00
Union.....	1	317	952	6	30	113		2,018.00
Vance.....	7	454	438	11	2	113		1,827.00
Wake.....	7	1,300	1,052	12	12	711		5,950.00
Warren.....	11	240	807	12	11	48		1,654.00
Washington.....	8	452	280	18	4	130		1,756.00
Watauga.....		99	168			76		594.00
Wayne.....	3	497	410			444		2,781.00
Wilkes.....		159	163	3	8	118		860.00
Wilson.....	5	468	456			382		2,613.00
Yadkin.....		156	64	3	1	34		489.00
Yancey.....	11	231	168		2	150		1,249.00
Miscellaneous Sales	67	54	223	2	1	39	4	1,481.00
TOTAL.....	2,424	47,967	42,901	492	1,064	22,739	288	\$248,456.00

Lake Mattamuskeet.....	\$ 4,152.00
Bush Blind and Shooting Point Licenses.....	993.75
Fur Dealers Licenses.....	2,617.00
Western Refuges.....	6,407.75

\$262,626.50

Less Proportionate Part of Combination Licenses Transferred to Inland Fisheries.....	22,739.00
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GRAND TOTAL.....\$289,887.50

FISHING LICENSE RECEIPTS, 1945

County	Non-Resident License	Non-Resident Permit	State License	State Permit	County License	Total
Alamance.....			50	27		\$ 113.50
Alexander.....			32	71		99.50
Alleghany.....	10	2	46	14	106	257.00
Anson.....		9	15	13		45.50
Ashe.....	3	2	53	2	310	434.00
Avery.....	36	73	301	28	313	1,182.00
Beaufort.....		5	84	216		281.00
Bertie.....	1	9	40	32		110.00
Bladen.....		9	70	103		200.50
Brunswick.....	1	5	48	49		130.50
Buncombe.....	12	32	1,882	199	421	4,376.50
Burke.....	3	56	532	959	776	2,390.50
Cabarrus.....			498	549		1,270.50
Caldwell.....		10	513	44	462	1,520.00
Camden.....	4	2	2			26.00
Carteret.....				2		1.00
Caswell.....	7		4	4		45.00
Catawba.....	1	17	725	180	497	2,059.00
Chatham.....			25	19		59.50
Cherokee.....	587	3,111	410	150	934	7,875.00
Chowan.....	6	11	29	52		125.00
Clay.....	86	280	216	105	402	1,596.50
Cleveland.....			264	93		574.50
Columbus.....	15	73	236	887		1 063.50
Craven.....	3	9	90	131		269.50
Cumberland.....	2	3	170	72		389.00
Currituck.....	130	664	172	304		1,810.00
Dare.....	26	116	81	55		435.50
Davidson.....			117	370		419.00
Davie.....			3	11		11.50
Duplin.....		5	53	46		134.00
Durham.....			407	169		898.50
Edgecombe.....		2	76	100		204.00
Forsyth.....	1	2	372	260		881.00
Franklin.....			15			30.00
Gaston.....			168	62		367.00
Gates.....	23	109	34	71		327.50
Graham.....	129	360	272	93		1,595.50
Granville.....			47	15		101.50
Greene.....			94	302		339.00
Guilford.....		11	396	99		852.50
Halifax.....	7	47	230	127		605.50
Harnett.....			289	161		658.50
Haywood.....	56	114	951	191	916	3,307.50
Henderson.....	43	161	344	62	386	1,481.00
Hertford.....	10	1	44	17		147.50
Hoke.....		1	19	7		42.50
Hyde.....	6	55	165	2,003		1,416.50
Iredell.....		3	168	83		380.50
Jackson.....	76	218	288	90	289	1,508.00
Johnston.....		1	217	294		582.00
Jones.....			11	13		28.50
Lee.....			89	37		196.50
Lenoir.....	6	1	336	431		918.50
Lincoln.....			102	85		246.50

FISHING LICENSE RECEIPTS, 1945—Continued

County	Non-Resident License	Non-Resident Permit	State License	State Permit	County License	Total
McDowell.....	48	118	257	221	596	\$ 1,578.50
Macon.....	40	95	249	56	533	1,354.00
Madison.....	10	10	78	14	234	457.00
Martin.....	2	3	81	128	-----	239.00
Mecklenburg.....	1	1	256	61	-----	548.50
Mitchell.....	3	6	293	83	128	776.50
Montgomery.....	-----	-----	44	35	-----	105.50
Moore.....	-----	7	88	132	-----	249.00
Nash.....	1	7	179	200	-----	470.00
New Hanover.....	3	2	339	137	-----	763.50
Northampton.....	-----	3	99	65	-----	233.50
Onslow.....	-----	1	75	16	-----	159.00
Orange.....	-----	3	51	55	-----	132.50
Pamlico.....	-----	4	1	15	-----	13.50
Pasquotank.....	2	9	54	4	-----	129.00
Pender.....	3	12	60	69	-----	181.50
Perquimans.....	-----	-----	5	4	-----	12.00
Person.....	-----	-----	40	3	-----	81.50
Pitt.....	1	-----	300	227	-----	718.50
Polk.....	141	679	175	414	280	2,221.00
Randolph.....	-----	-----	60	55	-----	147.50
Richmond.....	12	16	139	143	-----	425.50
Robeson.....	6	1	250	134	-----	598.00
Rockingham.....	-----	-----	67	-----	-----	134.00
Rowan.....	-----	-----	109	99	-----	267.50
Rutherford.....	152	505	715	909	423	3,572.50
Sampson.....	-----	7	59	71	-----	160.50
Scotland.....	9	3	37	44	-----	144.00
Stanly.....	1	-----	131	105	-----	319.50
Stokes.....	-----	-----	38	56	-----	104.00
Surry.....	7	10	59	9	30	197.50
Swain.....	24	146	232	147	307	1,110.50
Transylvania.....	15	86	187	87	201	779.50
Tyrrell.....	-----	14	6	17	-----	34.50
Union.....	1	9	57	218	-----	237.00
Vance.....	-----	-----	47	8	-----	98.00
Wake.....	5	-----	339	41	-----	723.50
Warren.....	-----	-----	4	1	-----	8.50
Washington.....	1	4	36	60	-----	111.00
Watauga.....	7	6	204	31	199	663.50
Wayne.....	-----	5	238	275	-----	618.00
Wilkes.....	-----	9	146	38	189	509.00
Wilson.....	-----	5	269	358	-----	722.00
Yadkin.....	-----	-----	11	-----	-----	22.00
Yancey.....	-----	23	160	108	159	556.00
Miscellaneous Sales.....	17	-----	16	-----	-----	117.00
TOTAL.....	1,802	7,398	18,235	14,512	9,091	\$ 69,225.00

Lake Mattamuskeet.....\$ 2,473.50
 Western Refuges.....8,438.00
 To Proportionate Part of Combination Licenses from Game to Inland Fisheries.....22,739.00

GRAND TOTAL.....\$102,875.50

HUNTING LICENSE RECEIPTS, 1945-46

County	Non-Resident License	Resident License	County License	State Trapper	County Trapper	Combination License	Guide License	Total
Alamance		1,048	536	19	9	294		\$ 4,931.00
Alexander		108	132	2	2	47		654.00
Alleghany		23	68	1	7	46		338.00
Anson	1	133	670	4	26	88		1,500.50
Ashe		54	401		1	41		729.00
Avery	39	217	189	6	3	122		1,956.50
Beaufort	66	1,463	910	16	32	206	4	7,278.00
Bertie	10	357	1,357		31	364		4,101.00
Bladen	10	474	1,033		1	235		3,552.00
Brunswick	4	307	1,094	1	9	98	2	2,500.00
Buncombe	97	1,473	1,284	7	9	1,367		12,713.50
Burke	3	357	387	5	7	606		3,957.50
Cabarrus		644	267	8	2	540		4,387.00
Caldwell	2	481	480	8	2	483		3,914.00
Camden	87	210	190	23	25	32		2,415.50
Carteret	73	687	1,215		11	46	16	4,693.50
Caswell	35	115	189		4	23		1,176.50
Catawba		723	304	19	4	617		5,006.00
Chatham	60	375	385	13	7	116	1	2,962.00
Cherokee	18	186	331	1	5	225		2,081.00
Chowan	18	267	201	15	6	112		1,786.00
Clay	11	44	244	3	5	104		981.50
Cleveland		485	567	6	6	379		3,568.00
Columbus	42	720	1,065		1	386	7	5,455.00
Craven	14	1,725	1,713	7	34	222	1	8,087.00
Cumberland	3	860	547		12	440		4,957.50
Currituck	1,079	740	725	4	153	125	188	21,427.50
Dare	121	308	323	10	64	33	18	3,502.50
Davidson	2	662	438	5	7	215		3,344.00
Davie	1	151	102	2	1	20		658.50
Duplin	11	632	752		10	350		4,238.50
Durham	5	1,645	236	18	6	772		8,402.50
Edgecombe	8	481	669	7	48	286		3,497.00
Forsyth	5	1,824	443	17	4	527		8,159.50
Franklin	1	189	390	9	21	86		1,385.50
Gaston		1,537	662	10	6	385		6,855.00
Gates	95	197	539	9	10	95		3,029.50
Graham	39	208	320			70	2	1,838.50
Granville	1	211	443	4	10	96		1,507.50
Greene		169	210	1		280		1,840.00
Guilford	11	1,988	405	9	8	876		10,086.50
Halifax	27	486	888	21	11	423		4,541.50
Harnett	2	453	330	4	3	465		3,598.00
Haywood	7	370	592		3	439		3,572.50
Henderson	56	263	441	7	6	232		3,059.00
Hertford	69	286	366	13	11	177		3,062.50
Hoke	3	260	477			133	2	1,845.50
Hyde	521	372	830	4	64	148	101	11,258.50
Iredell	5	557	1,024	9	7	311		4,057.50
Jackson	3	103	122		1	141		1,043.50
Johnston	4	342	1,012	11	24	348		3,573.00
Jones	10	380	554		3	58	2	2,097.00
Lee		423	343	6	9	253		2,660.00
Lenoir	2	615	508	3	38	740		5,429.00
Lincoln	1	117	103	9	2	157		1,128.50
McDowell	15	360	485	7	4	249		2,822.50

GRAND TOTAL-----\$362,563.75

DIVISION OF MINERAL RESOURCES

INTRODUCTION

As early as March 1944, the War Production Board began to announce adequate stock piles of the various minerals needed in the war effort and to order cutbacks in the search for and production of these materials. While this change meant fewer requests from Governmental agencies for information and aid on the mineral resources of North Carolina, there developed an increased number of requests and inquiries from industry and individuals for such services. With the end of the war in August 1945, the need for mineral resources in new industries to supply the needs of normal peace-time economy further increased the requests for such information and services. The requests for such information and services continue to increase rather than to decrease. As a result, the past biennium has been a most active one for the Division of Mineral Resources.

The personnel of the Division changed frequently during the biennium. J. L. Stuckey, State Geologist, and Jane Anderson, Junior Stenographer-Clerk, were the only employees to serve continuously throughout the period. W. A. White, Assistant State Geologist, resigned November 6, 1944. The position remained vacant, due to the shortage of trained geologists, until November 1, 1945, when T. G. Murdock, who had served as Assistant State Geologist from August 1, 1940, to July 15, 1942, resumed the position. W. A. Reid, Associate Chemist, resigned June 30, 1945. This position remained vacant until June 1, 1946, when Philip N. Sales began work as Senior Chemist in a modern chemical laboratory in Asheville, reference to which is made later in this report. From July 1, 1944, to October 15, 1944, E. Willard Berry was employed on a part-time basis to investigate copper deposits in Chatham, Moore, Randolph and adjacent counties. Since April 1, 1945, he has been employed on a part-time basis to make a study of the limestone and marl resources of the Coastal Plain and to further study the Deep River Coal Field. W. A. White was employed on a part-time basis from January 10, 1945, through June 30, 1945, and worked on copper deposits of Chatham and Moore counties. From July 1, 1945, through October 15, 1945, he worked on sillimanite deposits of the Upper Piedmont Plateau. During July and August 1945, E. L. Miller, Jr., worked on talc deposits of Cherokee, Macon, and Swain counties. From July 15, 1945, through September 15, 1945, Margaret B. Keever, Mary H. Seys, and Annie B. Shotwell were employed as special technicians on a mica testing program in Asheville.

The work of the Division of Mineral Resources is divided into two main classes: (1) General—in which inquiries are answered, available information is furnished interested persons, and services are rendered

to the mineral industry; and, (2) Systematic Studies—in which detailed investigations are made of specific mineral resources or of specific areas.

GENERAL

The general services rendered by the Division may be outlined as follows: (1) Replies to inquiries requesting general information on the mineral resources of the State and specific inquiries relative to the value or availability of particular properties. More than 2,000 such letters were answered, many of which led to investigations in the field where further geological advice was given. (2) Examination of mineral and rock specimens sent to the office for identification. Some 500 individual specimens were examined during the biennium and the senders were given information as to the identity and value of the materials submitted. This type of work is considered important and prospectors are encouraged to send in specimens for examination. Through the examination of such specimens, some of our most important mineral deposits have come into production. (3) Field examination of mineral properties at the request of the owners. In addition to this information on specific problems, some 2,000 copies of the Division's technical publications have been sent to interested people. These publications furnish more detailed and systematic information on the mineral resources of the State. There has been a demand for many other publications no longer in print and also for reports on many materials for which such reports have never been prepared. The best means of securing the proper development and utilization of the State's mineral resources is to have specific information available in printed form to furnish interested persons and industries. The publication of such reports is being pushed as fast as funds and personnel will permit.

The Division has coöperated as fully as possible with mining companies, individuals and public agents in furnishing information and advice on mineral problems. Such advice and assistance has covered copper, coal, limestone and marl, stone, sand and gravel, clay and shales for use in structural clay products, shales for producing lightweight aggregate, and others too numerous to mention here. Every possible effort has been made to coöperate fully with municipalities, industries, State departments, institutions, and divisions on problems of a geological nature. Among these have been the location of many well sites for securing adequate water supplies from ground water sources. The Division has also coöperated with State and Federal agencies on problems relating to soils and geology. All available information was placed at the disposal of the U. S. Bureau of Mines in its program of work in the State and aid and assistance was given on problems relating to corundum, coal, barite, pyrophyllite, manganese and iron ore. For the first time in the history of the State, a systematic search for oil and gas was begun during the biennium. All available information and every possible aid available through the Division have been furnished those interested in the program.

During the biennium, the Division has published the following reports:

- Bulletin 43, "Economic Geology of the Spruce Pine Pegmatite District, North Carolina," by J. C. Olson.
- Bulletin 47, "Progress Report on Ground Water in North Carolina," by M. J. Mundorff.
- Bulletin 48, "Residual Kaolin Deposits of the Spruce Pine District, North Carolina," by J. M. Parker.
- Bulletin 49, "Mica Deposits of the Franklin-Sylva District, North Carolina," by J. C. Olson and Others.
- Information Circular 3, "Selected Well Logs in the Coastal Plain of North Carolina," by M. J. Mundorff.
- Information Circular 4, "Sillimanite Deposits of North Carolina," by C. E. Hunter and W. A. White.
- Mineral Investigation 2, "Manganese Deposits in North Carolina," by W. A. White.

In addition to the above, the following papers, based on the work of the Division, were published in technical journals:

- Stuckey, J. L., "Wartime Exploration of North Carolina's Mineral Resources," *North Carolina Engineer*, September 1944.
- White, W. A., "Geomorphic Effects of Indurated Veneers on Granites in the Southeastern States," *Journal of Geology*, September 1944.
- Mundorff, M. J., "Ground Water Problems in North Carolina," *Journal of the American Water Works Association*, vol. 37, 1945.
- White, W. A., "Tungsten Deposit Near Townsville, North Carolina," *American Mineralogist*, vol. 30, 1945.

SYSTEMATIC STUDIES

From the long-time viewpoint, the most important part of the work of the Division of Mineral Resources is the systematic and continuing program toward surveying the mineral deposits of the State and mapping its geology. Whatever time is not used in performing the general routine services described above is utilized toward this objective. Detailed geological studies are made in the field and, as listed above, comprehensive reports are published describing the findings.

The field work on copper deposits of Chatham, Moore, Randolph, and adjacent counties, which was begun in 1943, was continued during July, August, and September 1944 and again in the spring of 1945. A great deal of valuable information has been secured which is being prepared for the best possible use.

On his return to the Division on November 1, 1945, T. G. Murdock immediately began preparation of manuscript for a new Economic Paper on the mining industry in the State. There are many requests being received for information on the State's mineral industry. The report, when completed, will contain a complete account of the devel-

opments brought about during World War II as well as complete production statistics. It is planned to have this report in the hands of the printer at an early date. He has also prepared, for and in coöperation with the Division of Commerce and Industry, a report on the needs for and possibilities of roofing manufacture in the State.

Early in 1945, requests were received for information on the limestones and marls of eastern North Carolina as a possible source of material for the production of Portland cement and also for agricultural lime. In view of the changes in requirement for limestone and marl in both Portland cement and agricultural lime in recent years, it seemed wise to restudy these materials in the Coastal Plain of the State. This has been done and manuscript containing the findings of the study is being prepared for publication.

As a result of geological and exploratory work done in the Deep River Coal Field in 1943 and 1944 under the sponsorship of the Department of Conservation and Development, the Walter A. Bledsoe Company of Terre Haute, Indiana, the third largest coal mining company in the United States, began a drilling program in the field late in June 1945. In order to help make this drilling program mean the most to the State of North Carolina, Dr. E. Willard Berry was authorized to coöperate in the program for the Division of Mineral Resources and give and secure as much information on the field as possible. The drilling program was continued for some eight months and ended at the beginning of the coal strike in 1946. Recent announcements indicate that Bledsoe has taken over a large block of coal lands in the field and will soon be conducting large scale modern coal mining operations there.

Much of the systematic work of the Division is made possible by coöperation with certain Federal agencies which are interested in the State's mineral resources. The Tennessee Valley Authority, the U. S. Geological Survey, the Colonial Mica Corporation, and the U. S. Bureau of Mines have all made valuable contributions to the work of the Division of Mineral Resources during the biennium. Such coöperation is highly beneficial in that State funds are matched and sometimes more than matched on a dollar for dollar basis on each coöperative project. In addition, the knowledge and skills of the leading geologists and engineers of the country are available through such coöperation at no added cost to the State.

Under date of September 27, 1944, the Colonial Mica Corporation released instructions effective January 1, 1945, limiting its purchases of mica to "*ruby mica*." Much of the mica produced in North Carolina and adjacent states cannot be classed as "*ruby mica*." As a result of the order, many mines producing "*green mica*" immediately began to close. The order also seriously threatened the future of the mica mining industry in the State by leaving emphasis on color rather than quality. The Division of Mineral Resources secured the coöperation of the U. S. Geological Survey, the Tennessee Valley Authority, the Colonial Mica Corporation, the Georgia School of Technology, and the North Carolina State College in carrying out an elaborate

testing program to determine what relations, if any, exist between color and quality of mica. Some 2,069 batches of mica, totaling approximately 250,000 sheets, were tested on the "Q-meter," better known as the Bell Telephone instrument. The sheets were then tested with Spark Test equipment to determine the presence of pin holes and cracks. The results indicate that there is no real relationship between color and quality of mica and that so-called "green" micas are equal and in many cases superior to ruby mica. A report covering the results of the tests has been prepared and is being edited for publication.

Coöperation has been carried on during the biennium with the U. S. Geological Survey on mineral investigation, ground water studies, and topographic mapping. The mineral investigation program was devoted to the so-called pegmatite minerals—mica, feldspar, and kaolin. Bulletins 43, 48, and 49, listed above, are a part of the results of this program. Individual maps of many mica mines were prepared and copies of the maps sent to the owner of the mine, and placed on open file in Washington, D. C., Spruce Pine, N. C., and Raleigh, N. C. The U. S. Geological Survey has also prepared manuscript for a Professional Paper containing full details of the information collected during the program.

As a part of the ground water study program, Bulletin 47, listed above, was prepared and published. A report has been completed on the Stokes, Caswell, Alamance, Guilford, Forsyth, Rockingham Area. Field work has been completed on an area including Cleveland, Lincoln, Gaston, Mecklenburg, and Cabarrus counties. In the fall and winter of 1945-1946 several well locations were made with an earth-resistivity apparatus. The results of the wells being drilled at these locations are being carefully checked to determine what improvements geophysical methods hold over geological methods in locating well sites in crystalline rocks.

Through an appropriation made by the 1945 Legislature, topographic mapping on a coöperative basis was begun with the U. S. Geological Survey in the fall of 1945. This represents a renewal of such coöperation after a lapse of approximately forty years. Work was started on the Chapel Hill Quadrangle.

The Tennessee Valley Authority has coöperated liberally, both formally and informally, during the biennium. During the summer of 1945, C. E. Hunter, representing the T.V.A., and W. A. White, representing this Division, carried out an investigation of sillimanite deposits between Cliffside, Rutherford County, and Elkin, Wilkes County. The results of this investigation are contained in Information Circular 4 listed above. Sillimanite is an important mineral for the production of refractories and the work carried out indicates that the deposits in North Carolina hold promise for future developments. Formal coöperative study of the talc deposits of Cherokee, Macon, and Swain counties was started early in July 1945. Field work had been about completed at the end of the biennium, but it will be several months before a complete report is available. Informal co-

operation has been carried on with the T.V.A. on a number of minor projects. The Division has also received reports on rutile in Clay County and monazite in Cleveland and Gaston counties which were prepared by the T.V.A.

Late in 1944, plans were worked out between the Tennessee Valley Authority and the North Carolina State College for the operation of a Minerals Research Laboratory in Asheville. Construction of a modern laboratory building was started in the fall of 1945 and had advanced to the stage where laboratory work was started in the building June 1, 1946. The Division of Mineral Resources is cooperating fully in the program of the laboratory. As indicated above, Philip N. Sales was employed as Senior Chemist in the Division and began work in a modern chemical laboratory in the building on June 1, 1946. The work of Mr. Sales will be fully coordinated into the program of the laboratory. Geologists of the Tennessee Valley Authority and this Division will furnish the geological information essential to the minerals and materials to be tested in the laboratory. The laboratory, as being operated, should provide a program of mineral concentration and utilization research long needed in the State and greatly aid in the development of its mineral resources.

The U. S. Bureau of Mines carried on an active program in the State throughout the biennium. The drilling program which was being carried on at Cranberry in the spring and summer of 1944 was suspended early in the fall. This, however, was followed by extensive geophysical exploration with a magnetometer. The geophysical work indicated extensive reserves of magnetite along the mineralized zone to the northwest of the old Cranberry workings, and drilling was started in this new area in the summer of 1945. All work was suspended for several months following the end of the war in August 1945. Drilling was again started early in the summer of 1946 and was showing excellent results at the end of the biennium.

Drilling, which the U. S. Bureau of Mines started in the Deep River Coal Field in April 1944, was continued until about the end of October when four holes had been completed. Drilling was renewed in April 1945 and two holes had been completed by the end of the war in August 1945. No further drilling has been done in the field, but Congress, in the spring of 1946, made funds available to continue the drilling program during the fiscal year July 1, 1946-June 30, 1947.

Other exploratory programs carried out by the U. S. Bureau of Mines in North Carolina during the biennium include: (1) a trenching, pitting, and drilling program on the brown iron ores of Cherokee and Clay counties, (2) a pitting, trenching and mining program on corundum in Clay and Macon counties, (3) drilling certain barite deposits in Madison County, and (4) drilling a manganese deposit near Zebulon, Wake County.

It was announced, early in July 1944, that the U. S. Bureau of Mines would set up, on the North Carolina State College campus in Raleigh, a regional mineral experiment station. During the biennium,

the first unit of the proposed building was completed. On the grounds of the Isenhour Brick and Tile Company, Salisbury, a modern plant was built during the biennium in which to carry on experimental work in sponge iron production. While these permanent quarters were being constructed, the Bureau carried on an active research program in rented quarters on the North Carolina State College campus and in the City of Raleigh.

During the biennium, there has been considerable geological and geophysical work carried on and some drilling for oil done in connection with the leases which were granted early in 1944 to the Coastal Plain Company, a local co-partnership, and the Standard Oil Company of New Jersey. Under a contract made by the Coastal Plain Company and approved by the Board of Conservation and Development, Floyd L. Karsten drilled a well on Laughton Point some five miles north of Morehead City in the spring of 1945. This well entered crystalline rock at 4,020 feet and reached a total depth of 4,044 feet. The well was a dry hole and was abandoned and plugged. Plans for an extensive drilling program on leases held by the Coastal Plain Company were made in the spring of 1946 and drilling was started near Merrimon in May.

On December 1, 1945, the Standard Oil Company began drilling adjacent to the Hatteras Lighthouse at Buxton. On July 9, 1946, this well reached a depth of 10,054 feet without encountering oil or gas and was abandoned and plugged. Crystalline rock was reached at a depth of 9,920 feet. Before the completion of this well, geophysical exploration work, preparatory to drilling another well, was started.

DIVISION OF STATE ADVERTISING

This is the story of an advertisement.

In January, 1945, while the nation still was at war, the manager of this Division stopped at a tourist court in western North Carolina. In the small talk which ensued with the innkeeper, he remarked that he was puzzled because he had so many Dutch West Indian patrons.

"They started coming a few months ago. Then their aunts, uncles, cousins and friends came. We have had thirty groups so far—and more are booked."

"What was the name of the first family to come?" we asked him.

The tourist cabin manager looked over his registration book. It was Van Hoogenstein.

Henreich Van Hoogenstein wrote the North Carolina Advertising Division in February, 1944. He was an employee of the Dutch Shell Oil Company, and said he had read a North Carolina advertisement in a metropolitan paper. Normally, he took his family back to Holland every five years on a 3 months leave.

"You understand," he wrote, "that in these times we cannot return to our homeland. My children are weary of the tropics. Could you recommend some place where they might see snow, but yet where the winter would not be too severe?"

Van Hoogenstein came, saw, and was pleased. He stayed 3 months, went home, and sent his relatives. They sent their friends. By January, 1945, that trickle had grown into a minor flood, which had pumped thousands of dollars into North Carolina. The money went to clothes merchants, to movies, riding academies, the tourist camp owner, transportation systems, beauty parlors, and, indirectly, to food merchants, to the tax collector, and to all the enterprises which operate to keep people alive and comfortable.

The advertisement which Mr. Hoogenstein read cost the State of North Carolina \$238. The answer to his inquiry cost an estimated 50 cents. Returns: some \$30,000 from ONE response alone.

The end is not yet. Many of the Hollanders told the tourist camp operator that they planned to retire to North Carolina with their savings, build homes and live out their lives on their pensions.

GENERAL

The past biennium has been devoted by the Division of State Advertising partly to getting this State into a position to meet the competitive situation resulting from some 33 states adopting promotional campaigns to take advantage of the migration of farmers, industries and retired persons, as well as the unprecedented volume of travel business backed up by years of restrictions.

Due to the fact that North Carolina kept its program alive during the war, we had a good start on many other commonwealths. When restrictions were removed, we had an organization, literature, and

other facilities to get promptly into business. The results are apparent in the traffic of recent months, as well as in the report of the Division of Commerce and Industry.

DIRECT ADVERTISING

In the biennium, outstanding media of America were chosen for North Carolina advertisements. A total of \$94,296.35 was expended for this purpose. The ads were placed in the following publications:

Tourist

New York Times	New York World Telegram
New York Sun	New York Herald Tribune
Washington Star	Washington Post
Washington Times-Herald	Chicago Tribune
Chicago News	Detroit News
Detroit Free Press	Philadelphia Inquirer
Philadelphia Record	Pittsburgh Press
Cincinnati Enquirer	Cincinnati Times-Star
Boston Herald Traveler	Boston Globe
Christian Science Monitor	Cleveland Plain Dealer
Cleveland Press	Baltimore Sun
Wilmington Journal News	Toledo Times
Columbus Dispatch	Boston Herald Tribune
Chicago Sun	Philadelphia Bulletin
Pittsburgh Post Gazette	St. Louis Globe Democrat
St. Louis Post Dispatch	Wilmington Journal
Chicago Herald American	Dayton Journal Herald
Milwaukee Journal	Newark News
Time	Holiday
Field & Stream	Hunting & Fishing
Outdoor Life	Newsweek
Redbook	Cosmopolitan
Parents	

Industrial

Fortune	Time
Business Week	Nation's Business
American Forests	Manufacturers Record
Blue Book of Southern Progress	United States News
Newsweek	Ceramic Age
Ceramic Industry	

Agricultural

Farm Journal	Country Gentleman
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RESPONSE

At the time this report was prepared, response to the program was at the rate of an average of 200 letters per day. For the six months ended June 30, 1946, 22,737 inquiries were received. This compares with 5,565 inquiries received in the previous six months. For the two years inquiries totaled 44,332, almost exactly half of which, it must

be noted, were received in the last six months' period, indicative, the Division thinks, of continuing expansion on the same scale for months to come.

A complete breakdown of sources of inquiries in the record-breaking, first war-free six months' period from January through June 1946, follows:

LIST OF INQUIRIES RECEIVED BY STATE, COUNTRY AND TERRITORY IN 6 MONTHS' PERIOD

Alabama	160	Nebraska	153
Arizona	42	Nevada	7
Arkansas	120	New Hampshire	108
California	750	New Jersey	912
Colorado	98	New Mexico	17
Connecticut	318	New York	3,026
Delaware	96	North Carolina	2,824
District of Columbia.....	408	North Dakota	47
Florida	448	Ohio	1,325
Georgia	320	Oklahoma	113
Idaho	48	Oregon	120
Illinois	1,409	Pennsylvania	1,625
Indiana	1,029	Rhode Island	78
Iowa	274	South Carolina	133
Kansas	175	South Dakota	45
Kentucky	156	Tennessee	251
Louisiana	166	Texas	336
Maine	96	Utah	29
Maryland	265	Vermont	64
Massachusetts	619	Virginia	433
Michigan	938	Washington	240
Minnesota	472	West Virginia	188
Mississippi	70	Wisconsin	420
Missouri	381	Wyoming	13
Montana	35		

21,301

FOREIGN COUNTRIES AND TERRITORIES

Acora	1	Cuba	3
Africa	13	Egypt	1
Alaska	2	FPO	3
Argentina	3	France	2
Australia	5	England	19
Bahama	2	Hawaii	10
Belgium	2	Holland	2
Bermuda	1	India	2
Brazil	6	Malta, G. C.	2
British West Africa.....	1	Mexico	8
British West Indies.....	1	Netherlands	1
Canada	238	New Zealand	2
Canal Zone	6	Norway	1

Peru	1	South America	2
Philippines	5	Venezuela	1
Puerta Rica	2	Switzerland	2
Saipan	1		
Scotland	1		352
TOTAL INQUIRIES RECEIVED BY STATE.....			21,301
Personal Requests (5% of total).....			1,084
TOTAL FOR 6 MONTHS PERIOD.....			22,737

INDUSTRIAL

Industrial inquiries go directly to the Division of Commerce and Industry and are not included in this report.

TRAVEL

The travel industry has advanced steadily from 1935, when it was estimated to be worth \$40,000,000 per year, until 1941 when it was estimated to yield North Carolina over \$150,000,000 per year. Due to rising costs and increasing traffic, we estimate the 1946 season as worth \$175,000,000 to North Carolina.

The travelers' money does not all go to hotels, as is commonly believed. He fills up theatres, rents boats, buys bait, patronizes drug stores, filling stations, cafes, souvenir shops and similar places, so that the travel dollar travels far and fast. We currently estimate that each vacationist in North Carolina will spend an average of \$8 to \$10 per day; that he will be here from 7 to 10 days, and that his money ultimately reaches everyone from the laundryman to the newsboy.

In Moore County alone, it is estimated that \$3,000,000 per year is spent by travelers. This is a substantial travel county, but it is by no means the largest. The industry is spread from Manteo to Murphy and in many counties and communities is more important than all other enterprises put together. For this reason, we have and will continue to emphasize as the strongest point in our program the development and protection of this valuable resource.

AGRICULTURAL

The agricultural campaign is designed to attract to North Carolina agricultural settlers specializing in those phases of agriculture in which the State is deficient, especially dairymen, livestock farmers and horticulturists. The deficiency in dairies is especially acute in certain sections of North Carolina.

While this program has attracted a great deal of attention and has resulted in the acquisition of a large number of citizens, it has been handicapped by the high price of farm lands and the difficulty of getting building material and farm equipment. It is felt that in the next few years it will be more resultful.

SERVICING INQUIRIES

To handle these and other inquiries requires the full time of one employee, and sometimes the time of the whole staff. Unfortunately,

flow of inquiries is not uniform throughout the year and fluctuates not only according to the publication of advertisements but also according to the seasons.

Most inquiries may be answered by the mailing of one piece of literature, but perhaps ten per cent require a letter. Around five per cent required considerable research for adequate handling.

All inquiries do not relate to the programs outlined previously in this report. A small percentage of them seek general information on the State, including such diverse subjects as the divorce laws, employment, and opportunities for education.

In handling agricultural and home-seekers inquiries, the Division sends needed information, and then lists such inquiries on a bulletin which goes to real estate dealers, county farm agents and others who have expressed a desire to locate such people in their localities. In the two year period ending July 1, 1946, we have issued 53 such bulletins, on which have been listed 1,651 of the most substantial requests.

This service has produced results. In Wake County alone, for instance, one real estate man has sold six farms directly from these bulletins. We have had letters from prospects telling us they are satisfactorily located in North Carolina.

PUBLICITY

The policy of keeping the division operating during war years was vindicated by results of the past biennium. In the past few months, hundreds of new publications have come into being, and others have expanded or changed policies, with the result that there was an unprecedented demand for story ideas. The Division anticipated this situation and was able to place scores of stories which reached millions of readers.

With our foto file—one of the best state foto libraries in the country, if not the best—the Division was in position to supply quickly the demand for stock pictures for the revision of books, encyclopedias and for new magazine and newspaper articles.

In the two years ended June 30, 1946, the Division released 560 stories to newspapers and magazines. It sent out 19,489 photographs to illustrate these or other stories. Inasmuch as stories and other material is released to outlets where there is a known demand for the type of material under consideration, there was excellent use of this material.

In practice, very little material is released directly to newspapers, most of it going to cyndicates and other group users. This not only insures economy of operation but also wide-scale use.

The most effective phase in telling the North Carolina story, however, has been in the presentation and working out of ideas for magazines. In this procedure, we keep story ideas before magazine editors, who then send staff people down to do them, with the assistance the Division can lend. A substantial portion of the attention North Carolina gets in the press comes through this method of cooperation.

PUBLICATIONS

In the past two years, material originating in this office has been published in almost every newspaper in America, and in the following magazines:

Saturday Evening Post	Biblical Recorder
Pageant	Travel Camera
Travelways	Instructor
Holiday	American Tour & Travel
Knickerbocker Weekly	Science Service
Parents	Food Materials
Ohio Motorist	Colliers
Esso Road News	Parade
The Horse	Trailways
Fortune	American
Flying Age	Field & Stream
Dixie Business	Maryland Motorist
Woman's Day	Esso Oilways
Investment Dealer's Digest	Southern Lumber Journal
Chemist & Druggist (London)	The Pilot
Mademoiselle	Better Roads
Victor News	Contractor and Engineer Monthly
Hobbies	The Manufacturing Jeweler
Columbia Crew	Gardens, Houses, People
Christian Herald	This Week
London Tobacco	Sports Afield
Manufacturers Record	School Arts
Garden Gossip	Southern Marine Review
News Week	The Poster
Progressive Farmer	Outwitting Handicaps
Sportsmen's Review	Sportfolio
Middleburg Chronicle	South
Aim	Country Gentlemen
Motor Court Age	Retail Home Furnishings
Pipe Lovers Magazine	Business Week
Anthracite & Bituminous Coal	Southern Agriculturist
Everywoman's	Power
Food Manufacturing (London)	Better Homes & Gardens
P.G.A. (Nat'l Golf Magazine)	Tar Heel Banker
Christian Advocate	Popular Science
Popular Government	FBI Investigator
Travel Management	American Sports Horseman
Rudder	19th Hole (Golf)
Carolina Motorist (AAA)	Textile Review
Atlantic Fisherman	American Horseman Sportlog
Country Gentlemen	Carolina Power & Light
Buick Magazine	Motor Boating
News Story World Wide	U. S. Dept. Interior (Mag.)
Southern Textile News	Southern Fisherman
State Magazine	Southern Aviation Journal

Grit	Southern City
Tourist Guide	The Buyer
International Business Machine Magazine	Conductors & Engineers Monthly
Fishing & Hunting	Highway Magazine
Camp Life	My Counsellor
American Educational Press	Pic
American Field	Travel Tips
Southland	Science and Mechanics
Brittanica, Jr.	Air World
Safety Education	National Aeronautics
Liberty	National Horseman
Coronet	Women's Professional Golfer
Highway Traveler	Merita
Travel Tips	Carolina Co-Operator
Pathfinder	Encyclopedia Britannica
American Motorist	Brotherhood Railroad Trainmen
Esso Farm News	American Business
Yachting	We the People
Look	House and Garden
The Mid-Continent Jeweler	Shields Publications (Fla.)
Seventeen	Southern Outdoors
London Hotel & Catering Management	Sport Stars
Southern Purchasing Agent	Western Sportsman
National Paint and Varnish	Let's Go
PCA News	Mass. Horticultural Society
Music	Harness Horse
	Star Weekly (Canada)
	Ford Motor News

Paper shortages have seriously handicapped the Division in the issuance of new literature, but in the past two years 150,000 copies of the new travel booklet, *North Carolina, Variety Vacationland*, have been issued.

In addition, we have revised and published 10,000 copies each of our Beef, Dairying and Poultry booklets, as well as a small folder devoted to "Spring in North Carolina."

The use of attractive and informative literature is being resumed by other states and regions and it is our hope to keep North Carolina material above average. At this time, our inventory of usable and up-to-date literature is in a sound position.

MOVIES

The Division's popular film, *North Carolina, Variety Vacationland*, is rapidly getting out of date. While it is still circulated and is in brisk demand, it can no longer compete with the films made by other states and which are of later vintage. Through an arrangement with the Standard Oil Company, we hope to replace this movie with versions of the new ESSO movie. These prints would have no ESSO advertisement except an acknowledgment of their source.

The Division was called upon to assist ESSO in the preparation of this film and to a large extent its composition resulted from our suggestions.

We have also assisted the Ford Motor Company and several other commercial companies in the preparation of travelogues.

As soon as suitable movie equipment is available, it is our intention to equip the Division's photographer so that we may make our own state movies in the future.

INFORMATION

In recent years, resorts at or near the borders of the State have pointed out the fact that many travelers enter the State with inadequate information, especially as to accommodations. Recently, the Division experimentally placed literature racks in some key cities and kept them supplied with folders and maps. It is hoped to extend this service with the idea of bringing visitors deeper into the State. Such an innovation contemplates the setting up of personnel-manned booths at such places as Fontana, Cherokee and similar border places. In some cases, it requires the coöperation of the National Park and Forest Services, the Cherokee Nation and other agencies. We have already initiated negotiations looking toward the completion of these plans.

MISCELLANY

In the bringing of North Carolina to the attention of the rest of the world, such items as these were involved:

Distribution of pictures for: postcards, match covers, convention displays, overseas (FI) "state" days, brochures and pamphlets by other State departments. . . .

Loan of State flags for parades in America and around the world. . . .

Sending "home soil" to GI organizations in many foreign nations. . . .

Revision of histories, encyclopedias, biographical publications. . . .

Assistance of local communities in laying out and printing local literature. . . .

Transportation to visiting journalists, lining up of interviews, and similar assistance. . . .

The Division distributed over 100 source books to persons doing or planning to do stories on North Carolina. . . .

Lending of prints or negatives for foto-murals, menu covers and similar types of displays. . . .

Mapping out and making reservations for editors or other journalists, newsreel people, still photographers and others—sometimes involving weeks of travel in North Carolina. . . .

Assisted in the preparation of accommodation and hunting and fishing and other pamphlets produced by other agencies.

PERSONNEL

The Division now consists of six employees, as compared with ten in the pre-war period. Due largely to salary scales, we had resignations totalling six during the two year period.

Since the last report, E. Carl Sink was added to the staff as writer.

DIVISION OF WATER RESOURCES AND ENGINEERING

INTRODUCTION

Life and civilization exist on nature's foundation of air, land and water, all three of which are of equal importance, as it would be impossible for life to last very long with the loss of any one. The behavior of all these cannot be predicted, but some idea of their future behavior can be obtained by a study of the past. Heavier rains, worse droughts, tornadoes, or sudden changes in the earth's surface may occur at any time. Even with long records these extremes may not fall within the period of record, but these are rare cases. The longer period covered by records, the less chance there is of exceeding the extremes.

The duty of this Division is to secure and study data on the behavior of the elements, try to use them wisely and make them serve as many people as possible. At the present time, we can concentrate our efforts on water only. Used wisely, water can be made the greatest servant of man, but used unwisely it can be man's worst enemy. Water must be used to carry waste as well as to support life and supply industry. A large percentage of our drinking water is obtained from surface water and unless great care is taken epidemics may be caused from some town or village dumping its waste above another town's water supply. Likewise an industry, by dumping its waste in a stream, can make the whole river useless for domestic consumption or industrial use. These problems can be solved and in time must be solved.

The past biennium saw very little change in this Division. Due to the lack of personnel it has been unable to do anything except the most essential work. It is impossible to secure engineers who can do the work of this Division on the present salary schedule. None of the engineers returning from the armed forces would consider the salaries offered and additional men cannot be secured when other organizations are offering much higher salaries. Unless something is done whereby more personnel can be secured, this Division cannot serve the public as it should.

A large volume of data is on hand now and all publications are out of date. This Division has been trying to collect this data and prepare it for publication. At the present time, one river basin has been completed and is ready for publication. This is only one out of twelve in the State. It is felt that these publications will be very useful to all who use water, more especially to industries expecting to locate in North Carolina.

This Division is coöperating with the Surface Water Division and the Quality of Water Division of the U. S. Geological Survey, the U. S. Engineers, the Tennessee Valley Authority and several State

agencies. These agencies have been very helpful in securing information related to the best uses of the waters of North Carolina. Without their coöperation this Division would not have been able to secure the information badly needed to carry on its work in serving the public.

STREAM GAGING

The major, and perhaps the most important, regular activity of this Division is the work of maintaining and operating stream gaging stations on all watersheds of the State. Requests for data collected on these watersheds are becoming more numerous each year. As municipalities grow, new industries form and old industries expand, the question of supplying sufficient water is ever increasing. Practically all large water supplies, where there is no question as to the supply being large enough, are rapidly being used up and smaller supplies are having to be depended upon. There is no way of predicting accurately the flow of any stream, but we can have a reasonable idea of the flow to be expected by looking at a record of the past. For this reason we must have long, continuous records of as many streams as possible. At present there are 132 active stations, all of which are automatic recorder type, located throughout the State. Of these, 6 have records over 40 years, 1 between 30 and 40 years, 24 between 20 and 30 years, and 63 between 10 and 20 years. The remainder have less than 10 years of record and are of very little value at the present time. More stations are badly needed in some of the sections of the State as requests are often received for information where we have nothing to give an idea of the flow in that section.

This work is carried on under a coöperative agreement with the Surface Water Division of the U. S. Geological Survey, and is under the supervision of E. D. Burchard, District Engineer. Mr. Burchard has been at this work in the State since 1924 and is familiar with the streams and the needs of the State. He has seen the number of stations increase from 38 in 1924 to 132 in 1946. Although this work is under the supervision of the U. S. Geological Survey, other agencies coöperating are the U. S. Engineers, Tennessee Valley Authority and several industries and municipalities.

This Division has suffered greatly from the lack of personnel and funds. Engineers could not be secured during the war and most of the men on this work were called into the services. A small force has been kept and practically all our stations have been kept operating, although, the usual standards for this work had to be lowered. The Tennessee Valley Authority is fast becoming an operating agency and for this reason is not needing records from several of their stations. Recently some stations were discontinued in their territory as they had no need for these records. This Division did not have funds to keep these operating, so they had to be discontinued. Several other stations are about to be discontinued for the same reason. A larger appropriation has been asked for the next biennium so that

stations which are needed can be continued even though the other agency has no use for the record. Besides keeping these stations operating, more funds are needed to rebuild several other stations. Several stations were built of wood, as funds were not available to make permanent stations at the time they were installed. With the appropriation requested, these stations can be built of concrete and will be permanent.

QUALITY OF WATER INVESTIGATION

In 1943, a coöperative agreement was made between this Division and the U. S. Geological Survey for the purpose of making studies of the quality of water of the streams in the State. The demand for this work is very evident as requests for the analyses of the surface water has been increasing steadily. With industry expanding, new industries being established and municipalities requiring more water, the need for this work is being made more and more evident.

By following a definite program, it is possible to soon have a clear picture of the behavior of the chemical contents of our waters. Beginning on October 1, 1943, and continuing to September 30, 1944, daily samples were run on 3 stations, and at the present, or from October 1, 1945, to September 30, 1946, 6 stations are having daily samples analyzed. Besides these regular stations, numerous spot samples are collected for prospective industries and others who need a water with specific standards. With the running of these 6 stations, the first step of our program will be completed. The State will be covered in a general way, having had stations scattered well over the Coastal, Piedmont and Mountain regions. Our next step will be to make specific studies of each river basin to determine the changes in the reaches of each river.

This work was started with the idea of securing information for industries and municipalities and thereby help them to locate water that will fit their specific needs. With the study of stream sanitation beginning to come into the spotlight, these analyses will be found very helpful as each river study is taken up. These analyses will be run so that they will fit in the program as stream sanitation progresses.

A coöperative agreement has been made with the State Board of Health whereby analyses are made of public water supplies. Under this agreement, the State Board of Health not only contributes \$2,500 per year, but also furnishes space for the laboratory. Copies of all these analyses are kept in the files of this Division and will be very helpful. A number of industries can be supplied with city water provided the water is suitable. It will not be difficult to find a suitable water among these files. These analyses will be published along with the analyses of surface water each year.

STREAM SANITATION AND CONSERVATION

A bill was passed by the 1945 General Assembly establishing the North Carolina State Stream Sanitation and Conservation Committee.

This committee is composed of 16 members of which 6 are from State agencies and 10 are from industries and municipalities. No appropriation was requested for this work at the time as none of the plans and policies had been established and for this reason the cost of the work could not be estimated.

The Committee met soon after the General Assembly adjourned and selected J. M. Jarrett as chairman. Regular meetings are scheduled for June and December of each year. Several meetings have been held and much interest has been shown by all members in establishing the policies and planning the work for the committee. The State Board of Health and the Engineering Experiment Station of North Carolina State College have worked up an agreement whereby Mr. Stiemke has been secured to make a preliminary survey and submit a report of the stream conditions in North Carolina. It is hoped that this report will be ready to submit to the 1947 General Assembly.

Little information has been secured on the pollution of streams in the past, but all knew that it is a growing problem in this State. Streams cannot be used for water supply only, but must also serve to carry waste from municipalities and industries. With both municipalities and industries growing at a rapid rate, the streams of North Carolina are becoming overloaded with waste. This overloading of the streams makes them not only unfit for future use, but also makes them dangerous from the standpoint of public health and recreation. These wastes can be made harmless and it is the work of this committee to find ways of doing it and at the same time not overburden industries and municipalities with needless expense of treating these wastes.

Several other states in the East now have taken steps to improve the conditions of their streams. Some of these are using drastic steps while others are using the same approach as North Carolina. This committee feels that by coöperating with municipalities and industries a solution can be found whereby the streams will be improved and the cost will not be a burden on anyone. Already some industries are spending large sums in studying this problem for their individual cases and the committee hopes to be of assistance to them in finding a solution. A trailer laboratory has been equipped for this work when the time comes for specific studies. The committee has been greatly pleased with the coöperation up to the present time and feel sure that this coöperation will continue.

This work cannot be done in a short time, but will require several years to get results. Only a few very pronounced cases of pollution were actually known in the past while a large number were polluting our streams and the pollution was unnoticed. All cases of pollution will have to be located and then each studied to find a method of reducing their load to a point where the stream can carry it without harmful effects.

BEACH EROSION

Nothing has been done on this project since 1940. The lack of personnel has prohibited any study being made since 1940, but it is hoped that surveys may be started again in the coming biennium.

The Beach Erosion Board has changed its program, and has placed the surveys in the hands of the U. S. Engineers. In the past, this Division made all surveys under the supervision of the Beach Erosion Board. In the future these surveys are to be made by the U. S. Engineers, coöperating with this Division and the Beach Erosion Board. Sufficient appropriation has been requested for this work and it is hoped that work can be started July 1, 1947.

This work is of the utmost importance in the protection of our long shoreline. Already several sections are beginning to suffer seriously from erosion and without study of the forces of nature causing this trouble, no definite step toward correction can be taken. Surveys had been made for several years prior to 1940 and should be continued.

TOPOGRAPHIC MAPPING

The need of up-to-date, accurate topographic maps of the State has long been felt by this Division. Accurate maps of the whole State cannot be found and only a small section of the State is now covered by maps that can be depended upon for any degree of accuracy. Although topographic maps would be helpful to most Departments of the State, this Division is greatly handicapped by the lack of them. In furnishing information about the streams, accurate areas of the watershed should be known. This is not possible over a large section of North Carolina, and for this reason the information cannot be given with the degree of accuracy it should have. The maps that are now being used in most of the State do not match and do not show the dividing line between the different watersheds.

The Mineral Resources Division secured a small appropriation for this work, but this was too small for the work that is required. Several Departments of the State are interested in having this work done, and it is hoped that something can be worked out whereby we can have accurate maps of the State.

GROUND WATER INVESTIGATION

The Division continues to collect records of ground water elevations of 10 abandoned wells throughout the State in order to observe the trends of ground water elevations and to study the relationship between ground and surface water. The increased dependence of many cities, industries, and private individuals upon ground water resources in many parts of the State, especially in the lower Piedmont and Coastal areas, makes imperative a thorough investigation of these resources and the adoption of State laws governing the use of flowing wells. The experience of other coastal states which have suffered serious

losses of ground water supplies through failure to control them points to the urgency of adoption of such laws to prevent similar losses in North Carolina.

EVAPORATION RECORDS

The Division has maintained evaporation stations at Lake Michie, Chapel Hill, and Lake Badin, collecting records from land and water surface. During this biennium only two of these stations are operating, but it is hoped that in the very near future we will be able to get the other one in operation. The two operating stations have long records and are, for this reason, becoming increasingly important. Due to lack of personnel, we have not been able to make studies of these records, but the collection of the data makes this a worthwhile project. All of the stations are located in the Piedmont section of the State, and in order to get a better picture of the evaporation, several stations in the Mountain and Coastal regions are needed.

There is a great deal of interest in the history of the city of New York, and it is not surprising that many people are interested in the history of the city of New York. The history of the city of New York is a very interesting and important part of the history of the United States.

THE HISTORY OF THE CITY OF NEW YORK

The history of the city of New York is a very interesting and important part of the history of the United States. The city of New York has been a center of commerce and industry since the early days of the settlement. The city of New York has been a center of culture and education since the early days of the settlement. The city of New York has been a center of politics and government since the early days of the settlement. The city of New York has been a center of science and technology since the early days of the settlement. The city of New York has been a center of art and literature since the early days of the settlement. The city of New York has been a center of religion and spirituality since the early days of the settlement. The city of New York has been a center of music and dance since the early days of the settlement. The city of New York has been a center of sports and recreation since the early days of the settlement. The city of New York has been a center of fashion and style since the early days of the settlement. The city of New York has been a center of food and drink since the early days of the settlement. The city of New York has been a center of travel and transportation since the early days of the settlement. The city of New York has been a center of communication and information since the early days of the settlement. The city of New York has been a center of entertainment and leisure since the early days of the settlement. The city of New York has been a center of health and medicine since the early days of the settlement. The city of New York has been a center of law and justice since the early days of the settlement. The city of New York has been a center of education and learning since the early days of the settlement. The city of New York has been a center of research and discovery since the early days of the settlement. The city of New York has been a center of innovation and invention since the early days of the settlement. The city of New York has been a center of progress and development since the early days of the settlement. The city of New York has been a center of growth and expansion since the early days of the settlement. The city of New York has been a center of change and transformation since the early days of the settlement. The city of New York has been a center of progress and development since the early days of the settlement. The city of New York has been a center of growth and expansion since the early days of the settlement. The city of New York has been a center of change and transformation since the early days of the settlement.

